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SECOND REPORT ON RADIOGRAPHIC WORK WITH THE BRITISH EXPEDITIONARY FORCES IN FRANCE.

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A brief account of the X-ray work performed at Boulogne base may be of interest, together with statistics of the first thousand cases.

In a previous paper I dealt with the work in my department at St. Nazaire. We closed down our hospital there, and were in comparative idleness for some time. On October 26 of last year orders arrived for us to entrain and leave for Boulogne. A special train was placed at our disposal, and within six hours the whole unit, including horses, ambulances, and about 60 tons of paraphernalia, was entrained. We remained for 20 hours at St. Nazaire station before departing. The trip occupied 56 hours, including a stop for six hours at Rouen. A corridor carriage was placed at the disposal of the sisters, whilst the officers had an ordinary first-class coach, with three compartments. We carried our rations with us, and were able to supplement them at several stations, with the addition of fresh bread. The trip itself was enjoyable. The country we passed through was surprisingly pretty. The lovely autumn tints of the foliage presented quite an artistic setting to a very pretty scene. One truck was occupied by my X-ray outfit, in charge of my assistant. During the journey the accumulators were charged by means of the portable engine and dynamo, and on arrival everything was ready for immediate use. Bottles of developer had previously been prepared and sealed.

On arrival at Boulogne we were instructed to proceed to Wimereux, about 3½ miles distant. Here we took over the Golf Hôtel, a place well known to many English people, and we set to work converting it into a hospital. Whilst the furniture was being carried out ambulances, laden with men on stretchers, began to arrive, and in a very short time 170 serious cases were on our hands.

For my purpose I selected a convenient room near the operating theatre, with ample space for stretchers to be carried in and out. Being well supplied with thick black cloth, a hammer and tacks, within half an hour this room was made light-tight.

Another room in the basement was found for a developing room, and within five hours all my apparatus was unpacked, set up, and I was hard at work "raying" the cases. Many of these cases were the most severe we have yet encountered, including extensively comminuted fractures of the lower extremities, and fractured skulls, with imbedded bullets. Several hours later, when Colonel Bourgham, one of our consultants, arrived, he was able to examine dozens of skiagrams through an improvised view box. It may be mentioned that the engine and dynamo served another purpose. This hotel only possessed a few kerosene lamps, gas and electricity not being laid on. Having previously taken the precaution of carrying a supply of flexible wire and lamps, I was able to supply the operating theatre and part of the establishment with light. After a little while, when matters became more settled, my assistant set to work connecting the dynamos which had been placed in the basement, with the X-ray room. With suitable switches, etc., connexions were made that enabled the accumulators to be charged *in situ*, and also in case of accumulator trouble, rendered it possible for me to work directly off the dynamo. As opportunity presented itself, I duplicated many parts of the apparatus, including accumulators, interrupters, etc. This is absolutely necessary on active service, as was demonstrated on several occasions. When in Paris early this year I was able to procure several useful accessories made by Gaiffe and Drault. Since the outbreak of the war X-ray apparatus is very difficult to procure,

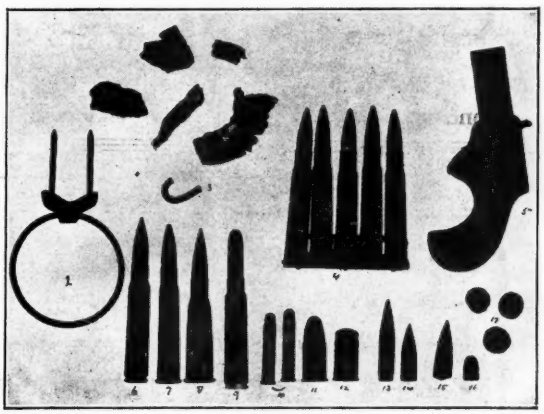

Fig. I.

1. Fragments of German Shell.
2. Key for Timing the Shrapnel (British).
3. Portion of Braces Carried into Chest.
4. Clip of Bullets (British).
5. Fire Ball Pistol (German), for Illuminating Enemies' Trenches.
6. Cartridge (German).
7. Cartridge (British).
8. Cartridge (French).
9. Cartridge (Belgian).
10. Cartridge (German A.M.C.), Automatic Revolver.
11. Cartridge, Revolver (British).
12. Cartridge, Revolver (British Naval), wrongly called Dum Dum.
13. Bullet (French).
14. Bullet (German).
15. Bullet (German), fired.
16. Bullet (Revolver).
17. Shrapnel Bullets (German).

Weapons of Various Kinds used During the War. These were all placed upon a Photographic Plate and a Skiagram was then taken.

and so much rubbish is on the market that one must exercise care in selecting suitable material. For months all my work was done with a single tube, and after having used it for nearly 900 cases it was accidentally broken. It was a great grief to me, having so carefully carried it about from place to place since last August. My apparatus has since required a valve tube, and the tubes do not get any reverse current to speak of. The reason of this is because of the low voltage worked from. From ten months' war experience I am fully convinced that a

portable apparatus such as I have is admirably suited for the work. As previously described, my coil is of twelve inches, and the Mackenzie Davidson interrupter is worked off 12 volts, 24 volts supplying the remainder of the necessary power. Two small wooden tables, placed end to end, act admirably for the patients to be placed upon for examination, and if need be, one can be removed to facilitate certain examinations. The tube can be placed beneath if so desired. This is very seldom necessary, and in the majority of cases the tube above answers all purposes. As for localizing, I see no need to alter my previous opinion of the method adopted. To repeat it: the foreign body is made to present itself as near to the surface as possible. This is done by moving the part of the body containing the foreign body, or the tube itself. When this is achieved a skin pencil, which is furnished with a metal end, is employed. The metal end is pressed in various directions until the foreign body moves more freely in one than in any other direction. The distance from the metal end to the foreign body is then estimated, the metal end kept in position, the light turned up, and then the pencil, being inverted, a blue mark in the shape of a cross, is made directly on this point, and a long horizontal line is drawn corresponding to the uppermost position of the part during the examination. The patient is then furnished with a note indicating that a bullet, or ball, or piece of shell, such and such a size (indicated by a diagram), lies at a certain distance beneath the blue cross. This cross mark is retained until the patient is operated upon, and practically every time the foreign body is recovered as indicated. Naturally, in this kind of work the personal equation of the surgeon is of as much importance as the personal equation of the radiographer. Our unit was fortunate in having the services of Mr. Thring for the first few months, and, later, Sir Alexander MacCormick and Dr. Chisholm. This method has always proved successful in their hands.

Fig. II.

Extensive Fracture of Anterior Part of Skull, and showing Piece of High-Explosive Shell which caused it.

Fig. III.

Fracture of Lower Jaw, with Bullet *in situ*.
(Skiagram taken at an angle.)

At the end of six months' services my assistant left for private reasons. I missed him greatly, as he was an expert electrician, and had been of great material assistance to me. Fortunately, I was able to secure another assistant from a base hospital.

With the advent of spring the work began to increase, and often of a day have 50 patients passed through my department. The majority of these have had their foreign bodies

localized, and all important cases have been examined radiographically. The most instructive skiagrams have been kept, and permanent copies in duplicate taken of each. On two occasions I have taken across to London several cases of skiagrams, and have had lantern slides made from them, which I hope to show to the Branch some time after my return.

The technique adopted in operating in these cases is that described previously. Usually the forceps are inserted gently along the tract that exists, whether the foreign body be removed by this route or directly through the mark indicated. In cases of shell, and sometimes shrapnel ball, fragments of cloth are generally discovered in this tract. This is not the case in bullet injuries. Next, a counter opening is made, if not already existing, and a long piece of gauze is drawn through the tract, and finally the part is washed well with peroxide and a saline dressing is applied. Lately, in the severe cases, which often have to leave here quickly (for after all our hospital is but a clearing hospital), rapid proofs have been struck off on self-toning paper, and the patient is furnished with this to present to the next hospital he arrives at in England.

Special mention must be made of the value and extreme necessity of radiographing head injuries. It is surprising to note, since a routine radiographic examination has been made of these cases, how many fractures have been detected that otherwise might have been overlooked. Often, too, where the fracture has been previously discovered, the X-rays have revealed the nature of the injury to be more extensive than otherwise would have been imagined. Spicules of bone can be detected in the substance of the brain, and this frequently is the case especially in head injuries caused by high-explosives. Too much stress cannot be laid on the necessity for a radiographic examination of all head injuries, stereoscopic too, if possible, and if this be carried out systematically and carefully much useful information will be obtained, and very many patients will be spared from subsequent cerebral complications. In the second thousand cases which have nearly been completed, the value of these head examinations will be more fully appreciated. This paper is intended to deal with the first thousand cases only. On referring to the statistics it will be noted that the majority of injuries have occurred in the upper extremity, the head and neck coming second. The figures of St. Nazaire are compared with those of Boulogne. Bullet injuries have been far more common recently than in the first few months of the war; whereas 9% of the missiles found in the early cases were bullets, later on the proportion increased to 16%. This fact is probably due to the increased activity of the snipers. Many of the bullets appear to have turned right over after entering the part, and this probably has happened. There is also very little doubt that the Germans have, on many occasions, inverted the bullets in the cartridge cases before use, as such cartridges have been discovered on several German prisoners. In these cases the trajectory is not so true, but the damage caused to the tissues is much greater. The majority of injuries are caused by shell fragments, usually from high explosive shells. As a rule only one piece is in each wound inflicted, although on several occasions a second and even third piece have been found. These fragments are magnetic, and could easily be removed by means of a powerful magnet. The shell wounds are usually the most severe, and it is specially in such cases that gangrene originates. It has also been noted that injuries below the waist are generally of a more severe and contaminated nature than those above. This is probably due to the fact that more dirt is attached to the garments in this situation, from lying and sitting about.

It is most unusual now to come across a case of tetanus. This is due to the early prophylactic doses administered at the front.

It will be noted that in this thousand cases as many as 453 skiagrams have been taken, whilst 547 screen examinations were made. Appended will be found full statistics.

Statistics of the First 1000 Cases.

Fractures of	St. Nazaire.	Boulogne.	Total.
Skull	—	5	5
Mandible	3	8	11
Vertebral Column	—	1	1
Pelvis	—	2	2
Scapula	1	13	14
Shoulder Girdle	1	8	9
Humerus	10	59	69
Radius	6	29	35
Ulna	5	28	33
Radius and Ulna	—	3	3
Carpus, metacarpus and phalanges	10	49	59
Femur	5	33	38
Tibia	5	16	21
Fibula	4	13	17
Tibia and Fibula	—	—	—
Tarsus, metatarsus and phalanges	2	11	13
Os calcis	2	2	4
Elbow joint	1	1	2
Wrist joint	—	—	—
Knee joint	—	—	—
Ankle joint	—	—	—
Total	55	281	336
Gunshot Wound of			
Head and Neck	16	229	245
Thorax	12	36	48
Pelvis	3	5	8
Arm	21	101	122
Forearm	18	70	88
Hand	14	58	72
Leg	23	51	74
Thigh	18	77	95
Foot	11	34	45
Vertebral Column	1	4	5
Abdomen	1	3	4
Elbow	5	17	22
Shoulder	16	69	85
Wrist	6	20	26
Knee	9	33	42
Ankle	—	6	6
Back	3	23	26
Buttock	2	20	22
Total	179	856	1035
Missiles.			
Ball	23	37	60
Shell	60	227	287
Bullet	9	54	63
Totals	92	318	410
Skiagrams	91	362	453
Screens	99	448	547
Totals	190	810	1000

A CASE OF TRANSPOSITION OF THE VISCERA.

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The patient, a miner, aged 48, was admitted under the care of Dr. Swift, at the Adelaide Hospital. The duration of his terminal illness was fourteen days, and his symptoms were those of a lobar pneumonia, which autopsy subsequently revealed as the cause of his death.

The case was of interest from an anatomical point of view, for, during his stay in the hospital, clinical examination of the patient demonstrated that several viscera in the thorax and abdomen were transposed.

At autopsy, the whole contents of the thoracic and abdominal cavities were removed *en masse*, the parietal pleura being stripped out of the thorax, and the intercostal vessels cut to permit of the removal of the aorta. The musculature of the posterior abdominal wall was detached from its origins and insertions, and the crura of the diaphragm were separated from the bodies of the lumbar vertebræ, so that the retro-peritoneal structures in the abdomen might be resected with their relations undisturbed.

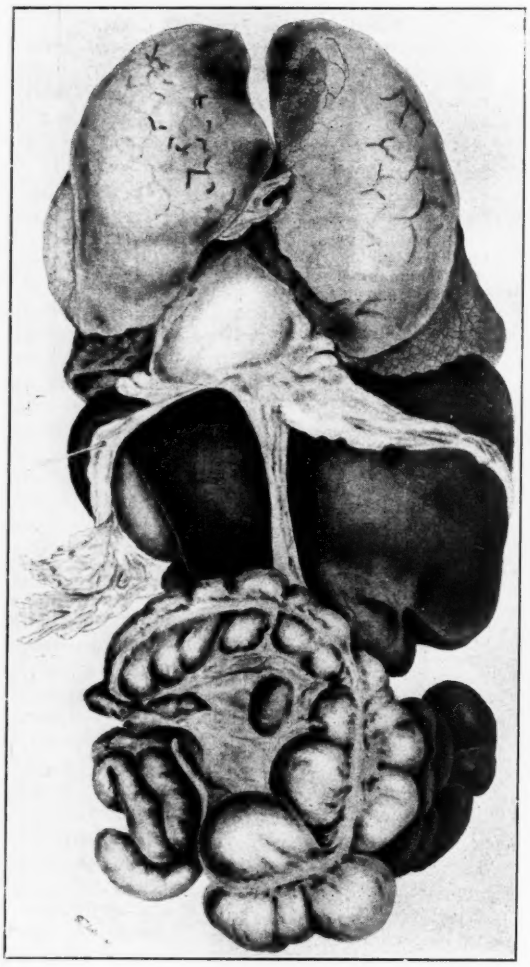


Fig. I.
Dissection from the Front shows Right-Sided Spleen, Left-Sided Liver and Dextro Cardia.

The Thorax.

The lungs were each found to possess but two lobes. The transverse fissure was not present on either side. The arch of the aorta was in relation to the superior border of the root of the right lung and the vena-azygos major preserved a similar relation to the root of the left lung (Fig. 1).

The heart (Figs. 3 and 4) was completely transposed, the arrangement of the structures being that of a mirror image of a normal heart. The innominate artery was a left-sided vessel. The right common carotid and right subclavian arteries originated in the thorax from the arch of the aorta. The superior vena cava was placed on the left side of the ascending aorta. The right and left phrenic nerves presented relations in the thorax which were exactly transposed. The recurrent branch of the right vagus turned round the arch of the aorta, and passed into the neck with relations similar to those of the normal left recurrent laryngeal nerve. There were no other developmental anomalies associated with the transposition, in the heart and great vessels. The azygos veins were transposed. The arch of the aorta

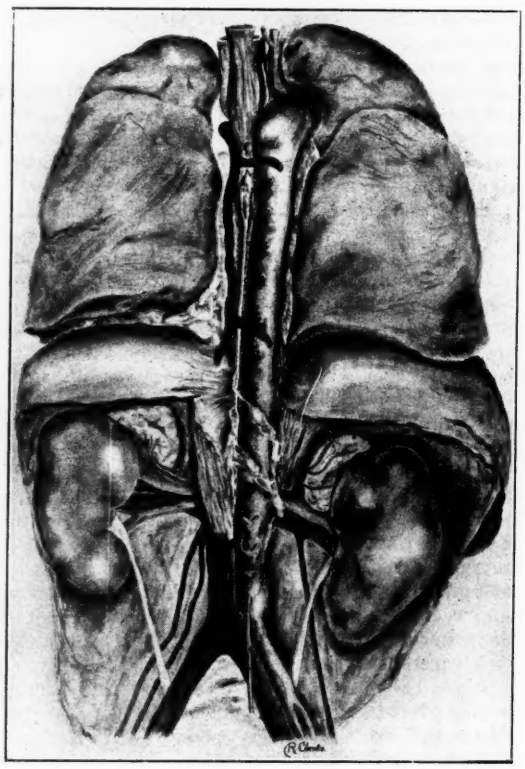


Fig. II.
Dissection from Behind.

curved posteriorly on the right side of the trachea and œsophagus. The descending aorta (Fig. 2) passed distally and medially from the right side of the mid line towards the median plane. In the aortic orifice the order of structures from right to left was: Aorta, thoracic duct, vena azygos major.

The lateral curves of the œsophagus were to the right, above and below the fifth thoracic vertebra, where it was placed in the median plane, and the œsophageal opening was to the right and in front of the aortic orifice of the diaphragm. Similarly, the caval orifice was to the left of the mid line. The thoracic duct passed into the neck on the right side of the trachea and œsophagus.

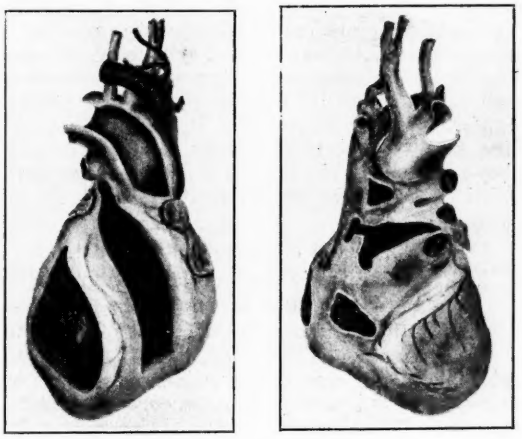
The Abdomen.

The inferior vena cava (Fig. 2) was placed on the left side of the abdominal aorta. The right internal spermatic vein terminated in the right renal vein and the corresponding left veins, two in number, opened into the inferior vena cava at an acute angle, just below the point of entry of the renal vein.

The right supra-renal was sickle-shaped and the left triangular in outline. The right kidney was placed somewhat lower than the left—this in spite of the fact that the liver was transposed and therefore in relation to the left kidney.

The spleen (Fig. 1) was placed on the right side of the abdomen and the liver on the left. The peritoneal and visceral relations of both organs were those of mirror-images of the normally placed viscera. The head of the pancreas was placed to the left and the tail to the right. The tail was related to the basal angle of the spleen.

The foramen of Winslow opened to the left, and the structures in the free edge of the gastro-hepatic omentum were: the hepatic artery to the right, curving over anteriorly to the common bile duct, to come



Figs. III. and IV.
The Heart Viewed from in Front and from Behind.

to lie to the left of that structure; the common duct to the left; and the portal vein behind and between them. The cardiac orifice of the stomach was placed on the right side of the mid line, and the stomach, which was L-shaped, curved so that the pylorus lay to the left of the mid line. The gastro-hepatic omentum was attached cranially to the portal fissure and caudally to the lesser curvature of the stomach.

From the pylorus the duodenum (Fig. 5) passed, its four parts lying in an oblique plane, nearly sagittal in direction. The first part, 2.5 cm. in length, passed posteriorly and very slightly to the left. The second part turned vertically downward for 6.5 cm. immediately to the left of the mid line and in intimate relation to the head of the pancreas. The third part passed cranially and dorsally, with a slight inclination to the left for 7.5 centimetres, and was placed in relation to the head of the pancreas, along its dorsal border. The fourth part turned to the right, and became continuous with the jejunum. The

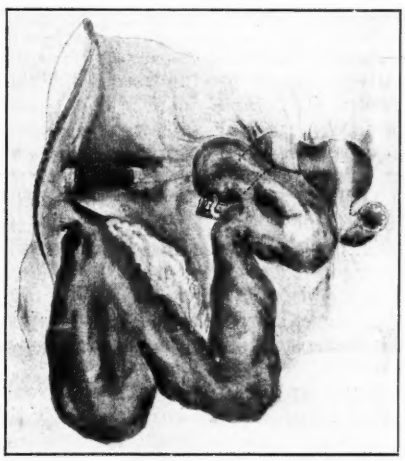


Fig. V.
Dissection to show the Stomach, Duodenum, and First Few Centimetres of Jejunum. The Peritoneal membrane, which stretches across the Duodenum and First Part of the Jejunum is also shown.

first 12 cm. of the jejunum were contorted, and lay beneath a thin membrane of peritoneal adhesion of doubtful origin. This membranous adhesion stretched from the second part of the duodenum to the peritoneum of the posterior abdominal wall, lateral to the duodeno-jejunal flexure. This adhesion was associated with numerous others of undoubted inflammatory origin on the under surface of the liver, connecting that viscus with the peritoneum of the gastro-hepatic omentum, the serous coat of the anterior surface of the stomach, the membranous sheet just described and the peritoneum of the posterior abdominal wall.

The adhesion may have been of embryonic origin, and due to the close approximation of the loops of the bowel, just described, with the peritoneum of the posterior abdominal wall during the process of development.

The root of the mesentery stretched from left to right, being only a little shorter than the normal root. The mesentery became continuous laterally to the right with the mesentery of the caecum and ascending colon.

The caecum (Fig. 1) was of large size, and the appendix neither of the infantile nor congenital

type. The left lumbar region was empty, and the caecum and ascending colon suspended from the posterior wall by a wide mesentery.

The portion of the colon (Fig. 6) continuous with the ascending part passed horizontally to the right below the lower pole of the spleen, for about 12 centimetres. This part of the colon was covered by a thick mass of peritoneum, and extra-peritoneal fat, formed by the fusion of the mesentery of the contorted bowel, presently to be described, so that there were six layers of peritoneum overlying this transverse piece of bowel, though they were not distinguishable, and had fused with the serous coat of this part of the large bowel. The bowel was not, however, uncovered by peritoneum posteriorly, for there were several small loculated cavities lined by peritoneum placed posterior to it, due to incomplete fusion.

The colon then turned down caudally in the position usually occupied by the ascending colon for 16 cm., when it became looped upon itself and turned cranially, running somewhat vertically and to the right, so as to be in front of the part just described. After passing so for 14 cm. it again turned downward, medial to the two formerly described loops, and became continuous with the iliac colon, which had a short mesentery, and passed across the right iliac fossa to the left side of the brim of the pelvis. There was a very short pelvic colon as the bowel, curling over the left pelvic brim, came back to the right, to become continuous with the rectum.

The arrangement of the peritoneum round the three vertical loops of large bowel in the right lumbar region is explainable only by a process of fusion of their originally continuous mesentery, as the diagram shows. The anterior layer of the great omentum was attached along the greater curvature of the stomach, the right aspect of the second part of the duodenum thence passing across the anterior surface of the ascending colon, and being attached along the anti-mesenteric border of the ascending colon. The posterior layer was also attached along the anti-mesenteric border of the ascending colon and along the inferior border of the transverse part. Thus the lesser sac, the anterior and posterior layers of the great omentum, four layers of peritoneum, originally came to lie in front of the horizontal part of the colon, in addition to the fused portions of the mesentery of the three vertical loops of the large bowel in the right lumbar region.

Fig. VI.
Dissection to show the Arrangement of the Large Bowel.

The lesser peritoneal sac was loculated by the presence of numerous adhesions between its anterior and posterior peritoneal walls.

Frequency of the Condition.

Arneill,[1] in 1902, estimated the number of recorded cases of transposition as approximately three hundred. A survey of the literature since that date would greatly increase that number. The condition is, however, not very common. Stoven, in the examination of 20,000 recruits, found clinically only two cases of dextro-cardia. The records of the Montreal General and Royal Victoria Hospitals[2] show two cases in 4,000 autopsies.

The condition is sometimes associated with other developmental anomalies, frequently defects in the cardiac development. In this case there was transposition which was not complete, and the interest lies in the arrangement of the alimentary tract. Griffiths[3] reports a case of transposition in a child with some similar features, notably a caecum and ascending colon which had a large mesentery, the left lumbar region being bare of attached bowel.

The ætiology of the condition calls for some few comments.

To explain the process of subsequent development, which gives rise to inversion of symmetry, we must go back to the very early stages of development. Possibly, with Cocklin[4] we may postulate a reversal of polarity in the ovum after it leaves the ovary. There follows inverted cleavage, and an inverted embryo develops. The factors which gave rise to the conditions found in the alimentary tract in this case were:—

(1) The inverted cleavage of the ovum.
(2) The increase in the length of the gut, which is the prime cause of rotation.

Owing to these factors, development of the stomach, duodenum, small intestine, large bowel, would tend to take place as a mirror-image. The bowel in this case did not present a complete mirror-image for:—

(1) The duodenum was in the oblique instead of a nearly coconal plane.
(2) The root of the mesentery passed left to right, as it normally does.
(3) The ascending colon and caecum were free, and had a well-marked mesentery, instead of being bound down in the left lumbar region.

(4) The arrangement of the transverse and descending parts showed a highly abnormal fusion of mesenteric and fixation in the right lumbar region.

(5) The sigmoid colon was greatly shortened.

In conclusion, I wish to express my indebtedness to Dr. Swift for clinical data, and to Mr. R. Cilento for drawings of the various dissections.

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[1] Arneill, *American Journal Med. Sci.*, November, 1902.
[2] McCrae, *The Jour. of Anat. and Phys.*, Vol. XL.
[3] Griffiths, *The Jour. of Anat. and Phys.*, Vol. XXVI.
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Reports of Cases.

A CASE OF CEREBRO-SPINAL MENINGITIS TREATED BY SOAMIN; RECOVERY.

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Private W. W. R., aet. 19, had been liable to occasional nasal discharge and attacks of tonsilitis. There was also deflection of septum nasi.

He went into camp on March 10, 1915, and was fairly well until April 18, when he had a severe attack of diarrhœa.

On May 2 he had occipital and lumbar pain, which increased on the 3rd, accompanied by cough, sore throat, and difficulty in swallowing, with anorexia and slight diarrhœa. On May 4 he had a two-mile run before breakfast, and felt "fit," but still had the cough and sore throat; he was medically examined as to fitness to be sent to the front, and was told he was "all right."

May 5: The cough and sore throat had become worse. There was a buzzing headache, and he complained of frequent cramps in the thighs and calves, especially when attempting to sit down. He felt very tired.

May 6: The patient complained that his head felt bursting. A cold in the head had developed, with difficulty in swallowing. One of the men in his tent developed measles, and was removed to the isolation camp.

May 7: All the men in the tent, including the patient, were put in the isolation camp. The patient felt very hot, with aching in the head, shoulders and back, lachrymation with sore throat and difficulty in swallowing. He said that his head and hands felt as if they were too large. In the evening he was removed to his home. During the night profuse perspiration broke out.

May 8: The temperature at 10 p.m. was 99°. There was a papular eruption on the chest, abdomen and limbs; granular patches were seen on the throat, and there was difficulty in swallowing.

May 9: The patient was better, though his feet felt numbed.

May 10: The condition was improved. The temperature at 8 a.m. was 99°, and at 8 p.m. 98.4°.

May 11: The patient was able to go out. I examined his naso-pharynx, and found the left turbinate enlarged, with inflamed patches on the posterior pharyngeal wall.

May 12: At 8 a.m. the temperature was normal. Headache was complained of, and vomiting of greenish fluid occurred at intervals throughout the night.

May 13: The temperature at 8 a.m. was 102°, at 11 a.m. it was 104°, and at 4 p.m. 99°. The vomiting continued during the morning. The bowels were constipated. A papular eruption reappeared on trunk and limbs. At night he became very restless, with delirium and muscular jerkings over the whole body, and rigidity of muscles of neck, vomiting and retching were nearly continuous. The temperature at 10 p.m. was 104.2°.

May 14: At 3 a.m. he became easier, and the temperature fell to 102.4°. At 11 a.m. it was 101.4°. At noon vomiting recommenced; the patient became delirious, with violent pain at the root of the nose, and clutching pain at throat, and photophobia.

At 4 p.m. he was admitted into hospital. The temperature was 101°. The pulse-rate was 80, and the respirations 28 to the minute. There was marked rigidity of neck muscles, with retraction of head and general tenseness of muscles. The pupils were equal, and reacted to light. The tongue was thickly coated. The heart and lungs were normal. The abdomen was distended. Pressure hyperæmia was noted. Romberg's sign was well marked. Urine, Sp. Gr. 1020, clear, no albumin, no sugar. He was put on diet of milk, strained broth and barley water. Cold was applied to the head by the irrigation cap, and instructions were given that whenever the temperature reached 102° the patient was to be put into a hot pack.

May 15: At 10 a.m. he was put in the hot pack one hour. A brown fluid stool was passed. He vomited greenish fluid. He was very restless, trying to get out of bed. At 9 p.m. he refused nourishment, retching occurred, and he complained of nausea. He was delirious during night. Six fluid stools were passed in 24 hours.

May 16: He complained of severe headache, with nausea, and the cough was troublesome. At 2 p.m. sudden spasms of pain in head set in, followed by deliriousness and restlessness. At 6 p.m. he was put in the hot pack for 1½ hours.

May 17: At 11 a.m. the hot pack was employed for one hour, after which the general condition improved, but the cough remained troublesome. He slept fairly well during the night.

May 18: Hot foments were applied to the back of the neck, and were renewed frequently. At 8 p.m. an enema was given with good results; a normal stool was passed. He had a comfortable night, and slept for six hours.

May 19: At 9 a.m. hot sponging was employed. A brown fluid stool, with some curds was passed. The milk ordered to be peptonized. At 11 a.m. he was put in a hot pack for 1½ hours, after which he seemed tired. At 6 p.m. hot sponging and tepid compresses to the abdomen were carried out. He had a restless night, sleeping only three hours.

May 20: The cap was reapplied to his head at 1 p.m., but as it distressed the patient it was removed. Tepid compresses to the abdomen were reapplied. He had a much better night, and slept for 4½ hours.

May 21: Lumbar puncture was performed. The intraspinal pressure was low, and the fluid slightly turbid. It was forwarded to the University Bacteriological Laboratory for examination. At 9 p.m. a hot pack was applied for one hour. The cough was still troublesome.

May 22: Dr. Bull reported that the cerebro-spinal fluid contained the *meningococcus intracellularis*.

May 26: There was headache, and the limbs were tremulous. At 11 a.m. an intradural injection of 10 c.cm. of anti-meningococcal serum was made. He slept well.

May 27: The patient slept during day. At 9 p.m. an enema was given. He had a restless night.

May 28: At 11 a.m. 15 c.cm. of anti-m ningococcal serum were injected into the spinal theca. He complained of headache and general weariness. He passed a restless night.

May 31: At 10 a.m. an intra-muscular injection of 1½ grains of soamin (*sodium para-aminophenyl arsonate*) was given. This was followed by several hours sleep. There was some muttering delirium, but otherwise the general condition was improved. He slept for five hours during the night.

June 1: The patient took nourishment better. The good condition was maintained, though Romberg's sign was still marked. There was less rigidity of the neck muscles. The temperature was sub-normal all day, but rose to 99.2° at 10 p.m., and at 2 a.m. to 103°.

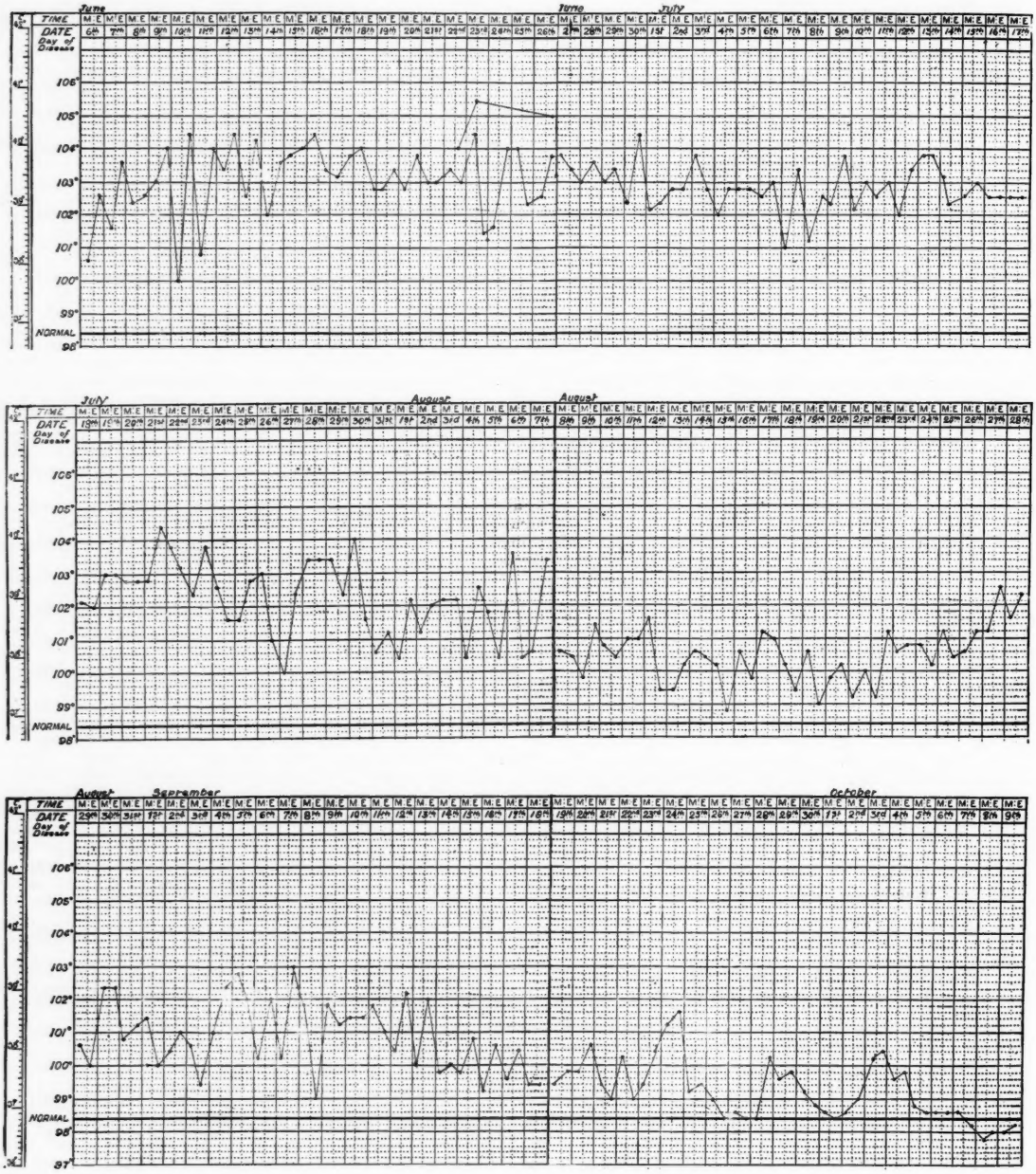
June 2: One grain of soamin was injected intra-muscularly at 5 p.m. This was followed by a natural sleep of five hours, improvement in appetite, with lessened muscular rigidity, and decreased Romberg's sign. The temperature remained below 99° until 6 p.m. on June 4, when a third injection of soamin (gr. 1) was given.

The temperature fell gradually to normal on June 5; it rose again slowly until it reached 102.6° on June 6, when a fourth injection of soamin (gr. 1) was given. The temperature fell gradually, and reached normal at 10 a.m. on June 7. There was no further rise of temperature after this date. The rigidity of the muscles and Romberg's sign gradually disappeared. The patient's condition improved

daily, although there were signs of cardiac weakness and general muscular enfeeblement, which, however, gradually improved under the administration of strychnine and strophantus, aided by massage and electricity.

The patient was able to be moved out on to the balcony on June 24, and on July 10 he was able to walk a few steps, but found difficulty in keeping his balance.

He left the hospital on July 30. On August 7 he was practically well, with fair walking powers, though there is still a tendency to keep the feet wide apart. There were no sequelæ except a slight *epidydimitis*.



The chief points of interest are:—

1. The gradual development of the disease.
2. The absence of any marked skin eruptions.
3. The absence of eye symptoms, *e.g.*, strabismus and diplopia.
4. The troublesome and continuous cough preventing sleep.
5. The relief afforded by hot packs.
6. The good results following the intramuscular injections of soamin and the small quantity used, only 4½ grains being injected altogether.
7. The practical absence of sequelæ.

The success of the treatment by soamin in this case would suggest its antagonism to the meningococcus; it will therefore be interesting to observe the result of its administration in the earlier stages of the disease; it might also be useful as a prophylactic in half-grain doses.

Reviews.

MATERIA MEDICA.

The science of treating disease depends more on the knowledge of the organism of the patient and the effect of the pathological changes within that organism than on the agents used in achieving a desired result. For this reason, therapeutics can never be learned from a book, even if materia medica, pharmacy and pharmacology may be. Nevertheless, the physician finds it essential to keep up his book knowledge of drugs and their preparation. No better evidence of this need can be given than the fact that Dr. Hale White's excellent little book[1] has reached its fourteenth edition in the course of 23 years. The issue of the new edition of the British Pharmacopœia has impelled the author to revise the whole subject and to bring it in line with the new order of things pharmacological. The changes introduced in the book are numerous, and much has been re-written and re-arranged. From the point of view of the student learning his materia medica afresh and having to be prepared to stand before the examiner whose questions will be fashioned according to the 1914 formulæ, the book will be found reliable and useful. Again, to those who have grown up in the use of its predecessors, there is much to recommend a continuance of the acquaintance of the old work in a new garb. But whether the book is suitable for a practitioner who has not been familiar with the former editions is another question.

Dr. Hale White has written this little text-book with a view of compressing much knowledge into little space. The result of this endeavour is always that detail, and often important detail, has to go to the wall. For example, the chapter on iron contains no attempt to explain the therapeutic effect in chlorosis and anæmia, in spite of the fact that the number of investigations and books on this subject which have been published is almost uncontrollable. Again, while a few lines on the toxicology of many of the drugs are appended to each chapter, not one word is mentioned of the toxicology of this metal. In the instance of arsenic, the account given of the action of the various preparations suggests the pharmacology of fifty years ago. A few empirical observations are recited, but no attempt is made to analyse the fate of the arsenical preparations after their introduction into the body. The description of the pharmacology of ether is extraordinarily brief, and not very convincing. The chapter dealing with the antitoxic and bactericidal sera and with vaccines had better be left out or written again in a separate volume. The author has attempted to give a useful guide to the chief of these preparations, and has failed. The data are insufficient, the presentation faulty and the selection of matter unhappy. An account of serum sickness compressed into 21 lines should not have been attempted, and, to our mind, is misleading.

The defects of the book, however, are to be sought in the endeavour to teach therapeutics at the same time as materia medica. As a full, clear, and well-arranged exposition of pure materia medica, we can recommend Dr. Hale White's fourteenth edition, especially to students.

NURSING.

In the preface to his useful manual on medical nursing,[2] Dr. Woodwark suggests that he may have overstepped the limits usually imposed on the scope of the scientific knowledge to be taught to nurses. He adds that the modern nurse has become a scientifically educated co-operator, who is able to take an intelligent interest in her work. It would involve us into too long an argument were we to discuss the advantages and disadvantages of according the nurse a scientific education. But we must differ from Dr. Woodwark in his view that the book under review could be considered a manual of scientific medicine. It gives in a compact manner the elementary rudiments of modern medicine. It presents to the reader in the simplest language plain truths in regard to disease and its management, but it does not contain anything more than superficial science.

The matter may be described as consisting of three forms, although the arrangement is not in accordance with this division. First there is nursing proper or the care of the sick. This portion is perhaps a little too elementary, but inasmuch as knowledge must come from practice, this fault is not a serious one. In the next place there is what may be described as clinical medicine. The presentation of this part is good, and probationers should find pleasure in learning the general significance of various diseases and their clinical manifestations. Lastly, there is the theoretical side of medicine. Here a little more detail might have been granted, for the information given is enough to whet the appetite for more, and yet no more is available. The illustrations are not as good as the reading matter, and are too few. A good book on a practical subject should be profusely illustrated, and we hold the opinion that nurses would be prepared to pay a few extra shillings for a book with a larger number of good pictures in it. Nevertheless, nurses will do well if they invest the sum of 4s. 6d. in this excellent manual.

[1] Materia Medica, Pharmacy, Pharmacology and Therapeutics, by W. Hale White, M.D. (Lond.), M.D. (Dub.) (Hon.), Senior Physician to and Lecturer on Medicine at Guy's Hospital; Editor of "A Text-Book of Pharmacology and Therapeutics," etc.; Fourteenth Edition, 1915. London: J. & A. Churchill; demi 8vo., pp. 712.

[2] Medical Nursing, by A. S. Woodwark, M.D., B.S. (Lond.), M.R.C.P. (Lond.), 1914. London: Edward Arnold; demi 8vo., illustrated, pp. 324. Price, 4s. 6d.

Our attention has been drawn by Dr. W. T. Chenhall to an error which escaped his notice in correcting the proof of his article published in last week's issue. Emmett's benzoic acid mixture consists of acid. benz. ʒ ii., boracic ʒ iii., aq. cinnam. ad. ʒ xii. (not ʒ ii.).

Dr. Chenhall also points out that the constipation in the case of Jackson's membrane recorded in the same article has now been almost overcome. The treatment adopted consisted in giving half an ounce of agar, mixed with porridge, at breakfast, and in using a glycerine suppository. The patient now has a daily evacuation after breakfast, and is improving rapidly in health.

Hospitals.

THE WOMEN'S HOSPITAL, MELBOURNE.

The Annual Meeting of the Contributors and Governors of the Women's Hospital and Infirmary for Diseases of Women was held on August 13, 1915, at the Town Hall, Melbourne, His Excellency the State Governor presiding. The business of the meeting consisted of the reception and adoption of the annual report of the Committee of Management and of the balance sheet and financial statement.

According to the annual report, the number of patients admitted to the wards of the hospital during the year ending June 30, 1915, was 1,392. To this number must be added 51 patients who remained in the hospital on June 30, 1914, making a total of 1,443. Of this number 89 were still under treatment at the end of the twelve months, so that the number of patients treated during the year was 1,354. Of these patients 41 died, that is 3.03%. The chief causes of death were sepsis (29 cases, including 13 of puerperal septicæmia, 6 of peritonitis, 4 of sepsis after abortion, 3 of general septicæmia, and one each of acute pancreatitis, septic pneumonia and septic thrombosis). There were only two deaths ascribed to carcinoma uteri. The list of operations includes a large number of minor gynæcological procedures, and a considerable number of major operations. Hysterectomy was performed 61 times, oöphorectomy 150 times and appendicectomy 102 times.

In the midwifery department, 1,814 patients were admitted during the year. Of this number, 1,456 women were delivered in the hospital, and 281 were confined in their own homes. Of the infants born in the homes of the mothers, 5 were still-born, while of those born in hospital 66 were still-born. The percentage of still-born infants to the total number was 3.9%, while the percentage in those born in the hospital was 4.3, and that of those born outside was 1.8. In addition to the 66 still-births, 65 infants died in hospital during the year. Twenty-three pairs of twins were born. Placenta prævia was met with 20 times, of which eight were central and 12 partial. Accidental hæmorrhage called for treatment four times and post-partum hæmorrhage 23 times. There were 38 cases of eclampsia, 26 *ante-*

partum, 8 *post-partum* and 4 during the parturition. Two of the women died of placenta prævia and three of eclampsia.

Of the 38 cases of infections, 10 were *ante-partum* renal infections, 8 were cases of septicæmia, 6 were cases of pelvic cellulitis, 6 were cases of *phlegmasia alba dolens*, 5 were cases of *post-partum* pyelitis, and 3 were cases of pyosalpinx. Four deaths from puerperal sepsis occurred. In all, 410 women were treated for threatened, inevitable, incomplete or complete abortions. The total maternal mortality was 0.85%.

It is stated that 48 medical students received instruction in the practice of midwifery, and 29 in gynæcology.

The maintenance of the institution cost £12,263, while an additional £333 were spent as extraordinary expenditure. The cost per patient per diem, on the basis of the ordinary expenditure, cannot be worked out, since the average stay in hospital is not given. The average cost per patient works out at £3 17s. 8d., while it is stated that the cost per bed was £82 18s. 11d.

On the credit side of the account, out of a total income from all sources of £12,241 the Government grants, the municipal grants, the grants for the Government wards and the rent of cottages yielded £3,264. The balance of £8,977 was derived from contributions by patients, charitable donations, collections and bequests and various fees.

THE JUBILEE SANATORIUM, DALBY.

The Medical Officer of the Jubilee Sanatorium at Dalby, Queensland, has issued his report for the year ending June 30, 1915. During the year 108 patients were admitted to the Sanatorium, and there were 43 in the institution on June 30, 1914. In 101 cases the patients were discharged, and in 5 death terminated the treatment. The daily average number of patients was 40.4.

Of the 101 patients discharged 9 were suffering from non-tubercular affections, and 96 from pulmonary tuberculosis. Of the former 6 were cases of asthma, 2 of bronchial catarrh, and 1 of paralysis of the vocal cords.

There were 26 patients in stage I., 44 in stage II., and 23 in stage III., while the 96th patient is entered as a case of tubercular bronchial glands. We presume that the classification is the usual modification of Turban's classification. In 50% of the patients in the first stage arrest of disease was accomplished. Improvement was recorded in 7 patients, and in 6 the condition remained unaltered. One of the 6 was suffering from a laryngeal complication. A second patient, who was discharged not improved, was pregnant. In stage II., 5 of the 44 patients had their disease arrested, *i.e.*, 11.36%. Some improvement was recorded on discharge in 19. A further 19 patients are stated to have been discharged *in statu quo*. One of these patients was suffering from ulceration of the larynx, and one of them was pregnant. One patient, who was affected simultaneously with malaria, died. It is reasonable therefore to regard the annual mortality in both first and second stage as nil.

None of the patients in the third stage of the disease were cured. In 7 cases improvement resulted, while in 15 the conditions remained unaltered. Of the latter one had ulceration of the larynx, and one had a sinus in the spinal region, presumably due to some tubercular affection of the vertebræ. Three patients died, which yields a mortality of 9%. In 1 case the cause of death was meningitis.

Dr. Stewart points out that the average residence of the patients discharged with their disease arrested was 172 days, and the average increase in weight was 20 lbs.

Tuberculin treatment has been employed in 18 cases, and graduated exercises in 19. The patients are being kept under observation, and a full report will be published after five years have elapsed from the date of discharge.

Sixteen patients have been treated by the so-called "nascent iodine treatment." This consists of potassium iodide in 30 gr. doses each morning, followed by repeated doses of chlorine water. Dr. Stewart considers it useless as a curative agent, but of some value in bronchitis associated with fibrosis. Artificial pneumo-thorax has been employed in 19 cases. The puncture method described by Forlanini has been employed. A full account of this method is embodied in the report. In 4 of the patients the pneumothorax could not be established on account of adhesions. In two cases the disease was bilateral, but the right lung was more markedly affected than the left. Compression was carried out on the right side. One of the patients improved considerably, and was able to return to work. He is still receiving an injection of 1 litre of nitrogen each month. The second patient was suffering from extensive disease. After 100 c.cm. of oxygen had been introduced 300 c.cm. of nitrogen were injected into the right pleural cavity. The patient complained of feeling clammy, and of tightness in the chest. Cyanosis and dyspnœa followed, and in spite of the removal of the injected gas the patient died two hours later. Of the remaining 13 cases, 2 were discharged without improvement, the disease having advanced in the non-treated lung. One patient, who was suffering from tubercular laryngitis, was not improved, as the laryngitis had progressed. The fourth patient did well under the treatment, while the result obtained in the fifth case is described as brilliant. There are still 8 patients under treatment.

In conclusion, the lady superintendent appends a statement of expenditure. The amount spent on maintenance totalled £3,396. This works out at about 4s. per day per patient.

THE HOSPITAL FOR SICK CHILDREN, BRISBANE.

The Hospital for Sick Children, of Brisbane, was founded in 1878. The management of the institution is vested in a Committee of Management of not less than twelve and not more than fifteen ladies, assisted by a committee of gentlemen. The committee is elected by the annual subscribers, life governors and life members at the annual meeting. Its duties consist of the appointment of the Lady Superintendent, the Banker, and other officers of the institution. The medical staff is also elected by the committee, and consists of consulting physicians, consulting surgeons, not more than six honorary physicians, one throat surgeon, one ophthalmic surgeon, two out-patient physicians, one pathologist and one dentist. The resident staff comprises of a senior and a junior resident surgeon. Patients are admitted on the ticket of a subscriber, subject to the approval of the committee or of one of the honorary medical officers. Save in urgent cases, the patients are not less than one year of age and not more than twelve. There is a Medical Board, consisting of the whole of the honorary staff, except the dentist, but the latter has a seat on the board in connexion with matters affecting his department.

The annual report for the year ending June 30, 1915, was presented to the annual meeting, and adopted. The number of beds in the hospital is 153, while there are 14 at the sanatorium at Sandgate. During the year under review, 1,978 children were admitted to the institute, and there were 120 under treatment on July 1, 1914. The average number of beds in daily occupation was 147. According to the medical report, the death-rate was 7.9%, or 1.9% less than in the preceding year. From the table of cases, it appears that there were 151 deaths from disease and seven in association with operations, making a total of 158. Since there were 2,063 children whose treatment was completed during the year, the mortality works out at 7.6%.

There were 15 cases of plumbism (not including the children still under treatment at the end of the year). Of these, one child died. Of the infective processes, enteric fever was treated 22 times, diphtheria 282 times, with 14 deaths, gastro-enteritis 159 times, with 46 deaths, tetanus 7 times, with 4 deaths, pertussis 10 times, with 3 deaths, malaria twice, morbilli 7 times, influenza 10 times, and scarlatina 3 times.

There were 88 cases of lobar pneumonia, with 3 deaths, 52 cases of broncho-pneumonia, with 20 deaths, and 83 cases of bronchitis, without any deaths. Other diseases were dealt with with varying frequency. In the throat department, a very large number of affections were treated. In all, 1,145 operations were performed, and only seven deaths are recorded. These include two in connexion with the operation of trephining and one in connexion with tracheotomy, drainage for peritonitis, removal of hæmorrhoids, the operation for osteomyelitis and the opening of a pyæmic abscess.

The accounts reveal a satisfactory state of affairs. The cost of maintenance for the year amounted to £12,509, which gives a daily cost per patient of 3s. 8½d., the daily average of occupied beds being 147. On the other side we find that the Government contributions amounted to the sum of close on £9,000, out of a total of close on £22,000.

The Medical Journal of Australia.

SATURDAY, SEPTEMBER 4, 1915.

Immune Bodies.

The attention of the medical profession is being directed at the present time into two channels, both of which are necessarily connected with the war. The one problem of importance has to do with the treatment of wounds inflicted by modern projectiles, and with the prevention of surgical gangrene and sepsis. The other problem is associated with epidemic disease and its prevention both on the field of battle and in the camps. The extraordinary success of prophylactic inoculation against enteric fever, and of the early or anticipated treatment of wounds with antitetanic serum have demonstrated the value of some of the work carried out in the bacteriological and bio-chemical laboratories during the passed two decades.

The news of the death of Paul Ehrlich has caused biologists to pause for a moment to review the knowledge possessed of those immune bodies which may play a part in the prevention and cure of disease, and which form the basis of modern doctrines in connexion with the ætiology and diagnosis of infective processes. Since Ehrlich first enunciated his doctrine of the side-chain theory, bio-chemists have become accustomed to analyse the phenomena of immunity in the terms introduced by the great Frankfurt scientist and his school. The first immune substance which claims our attention is the specific amboceptor produced in response to the absorption of a true toxin. In the case of diphtheria or tetanus bacilli, a substance is found in the neighbourhood of the bacilli which causes definite and typical toxic symptoms, and which is regarded as the true toxin of the bacteria. It is assumed that the same substance that is met with in broth cultures is present in the body, and gives rise to disease symptoms. The evidence of this is to be sought in the capability of the serum of an immunized animal to neutralize the greater part of the toxic activity of either the broth or the serum of an infected being. Of the nature of this toxin nothing definite is known. It appears to be not dissimilar to certain alkaloids like ricin, abrin, etc., but the similarity is rather a physiological than a chemical one. The introduction of a true toxin into an organism, either in the course of an infection or by direct injection, calls forth a change in the serum of the animal or man. The serum gains the property of neutralizing toxin, and of altering it quantitatively. Arrhenius and Madsen have shown that the neutralization of toxin by antitoxin is never quite complete, and that some toxin and some antitoxin is always left free or unattached in the mixture. The nature of antitoxin is still more obscure than that of toxin. It is always associated with globulin, and may be due to a physical change in the arrangements of the globulin molecules. When produced directly by injection of toxin, it appears to be more or less limitless. According to Ehrlich, the antitoxic amboceptor represents a chemical link which is normally present in the cell to which the toxin can attach itself, but which has become freed by an overproduction. His suggestion was that toxin could only exert its action if it became attached to cells for which it possessed an affinity. In the case of tetanus, the nerve cell attracts tetanus toxin, and the stimulation of the toxin on the cell leads to the reproduction of the same chemical substance which anchors the toxin to the protoplasm of the cell. This link is presumably placed in the cell for the purpose of attaching bodies for the nourishment of the cell. The cell finding its capability for taking in nourishment impaired by the fact that the poison has occupied the chemical links meant for food, throws out all its energy in the production and over-production of similar links. Provided that the toxin has not killed the cell, the production continues as long as the cell is subjected to over-stimulation by the toxin. But it is found that the cell cannot carry all the links thus produced. Many are consequently cast off, and are carried off in the body fluids as free receptors. These are Ehrlich's amboceptors, amboceptors because they have a double possibility of attaching themselves. The one end, so to speak, is called the cytophoric group, because it belongs to the cell proper, while the other is the toxophoric group, through which toxin can act. Once freed, and floating as it were in the fluids, the possibility of reattachment to the cells is removed, and the only possibility which remains is that which links up the

poison. Should any toxin be present, the amboceptor claims it for its unoccupied toxophoric group, and in this manner renders it impossible for the toxin to become attached to any unoccupied receptor of the nerve cells. This is approximately the simplest mechanism for an amboceptor. In the case of bactericidal substances, agglutinins, agressins, and the like, more complicated machinery is described. The evidence of these forms of chemical combination, either with the cytoplasm or with the substances in solution in the body fluids, cannot be discussed in this place.

Unfortunately, the toxin of tetanus possesses a high affinity for nerve cells. It is therefore obvious that if once a plentiful supply of the poison gains access to the nervous system of a patient, no amount of antitoxin can save his life. But the experience of the battle field and elsewhere has demonstrated that if antitoxin be injected before the bacilli of tetanus have had time to multiply and produce their poison the latter can be deflected, and the attack of the disease either aborted or prevented. It is suggested that epidemic cerebro-spinal meningitis should be treated with Flexner's serum. A short time ago we questioned the power of this serum to act, at all events in a powerful manner. It is claimed that the meningococcus produces a true toxin. The correctness of this view is open to dispute, and the mechanism described in brief does not, in our opinion, come into play.

Bactericidal substances are probably the reaction products of the bacterial protoplasm itself. In other words, their production must depend on the death of the pathogenic bacteria and on the dissociation of their bodies. Under experimental conditions, the activity of these bodies can be demonstrated with nicety. Pfeiffer's phenomenon in connexion with cholera vibriones does this. But the conditions are favourable in the experiment, while they are often highly unfavourable in ordinary infections. For this reason, disappointment has attended the therapeutic employment of bactericidal sera in enteric fever and in other infective processes. The attempts made to utilize these substances in the treatment of cerebro-spinal meningitis have not led to any ascertainable effect, save perhaps in the case of Flexner's serum. According to Flexner himself, the product giving rise to the reaction product is an endotoxin, that is, an integral part of the bacterial protoplasm, freed after the death and disintegration of the bacterium. In the test-tube, the action appears to be both directly and indirectly bactericidal. Flexner, moreover, has shown that normal serum possesses a distinct bactericidal action on the meningococcus, and that this action is not dependent on the amount of complement or ferment-like activity of the serum.

From a prophylactic point of view, the use of vaccines appears to promise greater success in this disease. We expressed this view in our issue of August 14, and it is now confirmed by Dr. Garnett in this issue. Wright believes that vaccines act by the production of immune substances, which he calls opsonins. It may be assumed that the introduction of a bacterium either in a living or dead condition, into an animal organism leads to the production of antibodies of various kinds, including bactericidal substances, agglutinins, proteolytic substances, agressins, bacteriotropins, opsonins, etc. The majority of these substances or properties will not appear until the bacterium has died and become dissociated. Much must depend on the form of protein or protoplasmic substance going into solution. In any case, the output of antibodies will be maximal, and the nature of them will depend on the reaction between the body and the substance absorbed. This form of active immunization of a polyvalent nature appears to be more promising than the passive immunity adopted by the introduction of a preformed bactericidal substance. For this reason, we came to the conclusion on theoretical grounds that prophylactic vaccination was more likely to effect a good result than any other form of treatment in cerebro-spinal meningitis.

It is unnecessary to attempt to trace immune substances in the prophylaxis of the diseases affecting our soldiers further in this place. The object of this discussion is to suggest lines of thought which, with the assistance of the explanation given us by Paul Ehrlich, may lead us to the adoption of useful methods of prevention and cure of diseases.

THE WAR CENSUS.

The Commonwealth Statistician has called our attention to the great importance of the work entrusted to him in connexion with the war census. He appeals to all members of the community for

collaboration and assistance. The gravity of the present crisis is recognized by everyone, and each individual is required to make the utmost effort of which he is capable. Members of the medical profession have demonstrated that they have realized this necessity, and that they are prepared to make large sacrifices for the benefit of the Empire. Each Branch of the British Medical Association has undertaken to organize the section of the medical profession within the area of the Branch, in order that the activities of the individual members can be utilized to the utmost advantage. A form of war census has thus been started already within the medical profession. The response in Victoria to the circulars addressed to members has been extraordinarily good, and it has been very satisfactory in New South Wales. The Federal Census will be conducted on a compulsory basis, and heavy penalties will be imposed on persons failing to perform their duty. We cannot believe that these penal provisions are necessary as far as the medical profession is concerned. We appeal to the patriotic spirit of every member to fill in the two cards issued by the Statistician. Should any difficulty by experienced by any practitioner in doing this, we are prepared to lend assistance. Every male individual between the ages of 15 and 60 years is required to fill the *personal* card. No special difficulty should be experienced in carrying this out. The *wealth and income* card has to be filled in by every individual of 18 years of age and over, and also by the representatives of persons under 18 years of age, or persons over 18 who are subject to legal disability. This card is somewhat more complicated than the personal card, and the amount of information sought is greater.

The cards were available at post-offices over the greater part of Australia on September 1, 1915. To some parts of Australia there are only mails every 30 and to others every 60 days. In these cases the cards will not be available within the prescribed time, but the proclamation provides that the cards may be sent in within 10 days of their arrival. In all other cases cards must be filled in and returned between September 6 and 15. Members are requested to use their influence with those with whom they come in contact in order that the results of the census may be satisfactory and complete.

OXYGENATION OF THE BLOOD.

During the last two decades many investigations have been made on the problems of respiration. A notable feature of this enhanced interest in the questions of respiration has been the considerable amount of work done on the human subject. Accurate means have been devised to measure the components of the alveolar air, to estimate the degree of saturation of the blood with oxygen, and to determine the quantity of oxygen in the blood. The labours of Haldane, Barcroft, Zuntz and other workers have prepared the methods with which it will be possible to examine the respiratory phenomena in many pathological states. It is well known that, while the administration of oxygen is of value in some cases with cyanosis, in other cases its administration is of little importance. J. F. Twort and Leonard Hill[1] have made some determinations of the amount of oxygen in the venous blood of medical students and other persons, at the London Hospital. They removed the blood from the veins in the arms, and estimated the oxygen by the ferricyanide process. The question that they set before them was that of the degree of saturation of the blood with oxygen in the case of persons at rest. It is well known that the blood is practically saturated with oxygen when air is forcibly breathed either voluntarily or as the result of a physiological excitant as muscular exercise. No data have been available previously concerning those following sedentary occupation, who are often averse to take forcible exercise. These investigators have found that forcible breathing of air or oxygen equally and notably increases the oxygen in the venous blood above the average result when breathing air quickly. After discussing these possible causes for these results, they conclude that there must be a diminution in the saturation of oxygen of the blood during rest, at least in some persons. Some parts of the lungs may remain unexpanded, so that the blood passing through these parts is not oxygenated. Forcible breathing ensures the expansion of all parts of the lungs, and the better saturation of the arterial blood. If it be true that the persons engaged in sedentary occupations do not expand the lungs sufficiently to ensure a sufficient supply of oxygen to the blood in all the pulmonary capillaries, this may be, in the opinion of the investigators, a contributory cause of a lessened immunity to the organisms of diseases such as phthisis.

These results serve to point the way to the importance of clearing the path of entry to the lungs. No obstacle that may still further diminish the quantity of air should be regarded as of a trifling nature. Further, every effort should be made to teach those with deficient chest measurements physical exercises that will improve the expansion of their lungs. Medical officers examining recruits have not infrequently noted individuals who cannot increase the measurement of the circumference of their chest by inspiration. Suitable exercises soon instruct such persons how to breathe. It is advisable that efforts should be made to correct faults in the manner of breathing during the early years of life.

THE PUBLIC HEALTH AMENDMENT ACT.

The failure of local authorities to administer the Public Health Act in a proper manner, and to apply safeguards against the spread of infective disease, led Mr. Flowers, during his term of office as Minister for Health, to introduce an amending Bill, giving the Board of Health powers to force local councils to carry out a hygienic programme. Since that time, the bill has become an Act of Parliament, and we have been waiting to learn of the benefits accruing from the enforcement of its provisions. Another Minister has been appointed, and considerable regret has been evinced that little has been heard of an improvement in the hygienic measures of local

[1] *Proc. Roy. Soc., London*, B. lxxxviii., p. 548, 1915.

authorities. Some two months ago certain municipal councils attempted to resist the introduction of inspection by inspectors appointed by the Board of Health. The protest has become a moderately widespread movement, and we presume that political pressure has been made to bear on the Minister responsible. A memorandum has recently been issued by the Board setting forth that if the local inspectors are properly qualified, and if they hold the certificates of sanitary inspectors, the certificates issued by the local authority will be accepted in regard to buildings described as unfit for human habitation. The effect of this concession may be serious. A local authority anxious to do as little as possible, and to maintain the reputation of local councils generally, may employ the most capable and the most conscientious sanitary inspector in the world, and yet succeed in baulking all attempts at a real hygienic control. On principle, the inspector employed by the central authority is more likely to find defects than the employee of the local body. This action of the department in allowing the local authorities to have their own way in one detail of the amending Act does not suggest that the administration of the Act generally will be satisfactory.

THE CASE OF CAPTAIN SCHLINK.

We have received the following letter from Dr. Purser, in which he asks us to act as receivers of subscriptions to a fund instituted for the purpose of reimbursing Captain Schlink. In accepting this suggestion, we would wish to emphasize to the members of the profession that Captain Schlink has been placed in the necessity of defending his honour as a medical practitioner and as an officer, and that by so doing he has performed a signal service to the medical profession.

Dear Sir,—

At the outset I apologise for troubling you, but I feel justified in doing so, since I am approaching you on behalf of Dr. Schlink, who has been subjected, as you know, to a very trying time lately. Being a member for some years of the Army Medical Corps, he was placed in charge of the Field Hospital at Liverpool, through none of his own seeking. In that position, those who are capable of judging, including his superior officers, have adjudged that he carried out his duties exceptionally carefully and well, showing good organizing capacity, and considering his appointment was only that of a part-time officer, he had to work very hard. Then aspersions were cast upon him owing to his having a German name, and he had to defend his honour before a Royal Commission. To do this he had to engage counsel. The Commission lasted a very long time, and now he is faced with a bill of costs for £295 16s.

Since he is only a beginner, it will be very hard for him to face this bill, and I do think that his fellow colleagues, those who are well established in the profession, cannot do better than hold out a helping hand, and so make his burden lighter. I thought it would come within your province to draw attention to it in the columns of *The Medical Journal of Australia*. I trust you may see your way to do so, and would suggest that you act as a Receiver or Treasurer, and notify the receipt of any help through your columns.

Unfortunately, Dr. Schlink is not a member of the Medical Union, and so has no claim there for assistance.

I enclose my cheque for three guineas as a start, and Sir Thomas Anderson Stuart has instructed me to have his name put down for three guineas. Dr. F. P. Sandes has just promised me that he will be pleased to donate three guineas.

Yours, etc.,

CECIL PURSER.

139 Macquarie Street, Sydney,
August 24, 1915.

INSANITY IN NEW SOUTH WALES.

The Inspector-General of the Insane for the State of New South Wales has issued his report for the year ending December 31, 1915, dealing with the hospitals and other institutions for the insane. He records that economy had to be exercised in every direction, owing to the financial condition of the country during the second half of the year. In several instances it was necessary to curtail the privileges of the staff. He records his appreciation of the action of the members in responding to the calls made upon them. Several men volunteered for military service with the expeditionary forces, and those remaining at their posts agreed to devote 1¼% of their salary to the various patriotic funds. The nurses have also collected money and sent articles to the Red Cross Society.

On December 31, 1914, there were 6,938 insane persons under official cognizance. Of these, 6,552 were in hospital and 386 on leave. The Inspector-General estimates the annual increase in the number of insane persons under official cognizance by having regard to the number of patients in the hospitals on December 31 of each year. The average increase for the past twenty years is 152.4. The smallest increase recorded was 61, in 1897; in 1907 it was 76, in 1908 it was 81, and in 1912 it was 90. On the other hand, the increase was over 200 in 1902, 1903, and 1910, and was 242 in 1909. The proportion of the insane to the general population was 1 in 268. The frequency of insanity appears to be slightly higher for the year 1914 than for the past six years. As compared with other States, New South Wales occupies a midway position. The lowest proportion in recent years is in South Australia, and the highest in Victoria.

The number of admissions to the various hospitals for the insane was 1,421, which is the highest number yet recorded. Of the total number of new patients, 85.9% were admitted for the first time into the New South Wales hospitals. Over one-half of these patients were natives of the State, while over one-tenth were natives of other Australian States. The "occurring insanity," *i.e.*, the relation of the number of admissions to the number of persons in the State has varied to a slighter extent than the frequency of insanity. The number of patients sent to the Gladesville Hospital for the Insane was 523, and to Callan Park was 483, to Parramatta was 131, to Rydalmere was 97, to Kenmore was 95, to Newcastle was 50, to Stockton was 2, and to Rabbit Island was 1. There were 80 admissions of persons arriving from parts outside the State. In the majority of instances these persons arrived by sea. After a few days' detention in the reception house, 36 were discharged and 44 sent to one of the hospitals.

The Inspector-General records that 563 persons were discharged "recovered." This number represents 39.62% of the admissions. On this basis it appears that the recovery rate has decreased 0.58%. It is not clear why the recovery rate should be calculated on the number of persons admitted during the year. The figure given, *viz.*, 563, represents 8.59% of the total number of patients in the hospitals for the insane. The data available does not admit of a calculation of the real rate of recovery, by which we mean the proportion of those who are discharged free from mental symptoms and who do not subsequently relapse, to the total number of insane persons, excluding imbeciles and those suffering from other forms of developmental defects. A large number of patients were discharged on probation. At the end of the year 1913 there were 294 patients on leave, while during the year 1914 750 others were handed over to the care of their friends. Of the 1,044 patients on leave, 279 were discharged, 369 returned to hospital, 10 died, and 386 remained on leave on December 31, 1914.

During the year, 301 males and 168 females died. The mortality, calculated on the average number of patients resident in the hospitals, was 7.21%. This rate is over ½% lower than the rate for the previous year. In 202 instances death was due to diseases of the brain, in 67 to diseases of the respiratory organs, in 62 to diseases of the cardio-vascular system, and in 40 to senile changes. Among the first class, 74 of the deaths were due to general paralysis of the insane, 48 to inflammatory and other gross cerebral lesions, and 35 to the effects of attacks of mania and melancholia. There were 22 deaths due to epilepsy, and 21 to cerebral hæmorrhage.

Pulmonary tuberculosis was present in 37 cases. There were six deaths due to enteric fever, one to influenza, one

to septicæmia, and one ascribed to parturition. Four patients committed suicide, and one died of the effects of an accident.

One of the effects of a considerable degree of liberty being accorded to the patients was that the number of those escaping was considerable. There were 43 patients who escaped; 38 were recaptured, and it is stated that none of the five who were not retaken were of a dangerous class.

The accommodation of the hospitals for the insane has been taxed to the utmost. The hospitals at Callan Park, Gladesville, Parramatta, Kenmore, Rydalmere, Newcastle and Morisset have accommodation for 5,460 patients, whereas there have been 6,059 patients at one time in the hospitals. The Inspector-General reports that no immediate means exist for providing permanent accommodation for the excess.

During the year, 1,659 persons were admitted to the reception houses at Darlinghurst and Newcastle. Of these, 763 were discharged. At the Mental Ward at Darlinghurst, 141 patients received medical attendance during the year. Two of these patients died, 121 were discharged, and 18 remained under treatment on December 31, 1914. The ward serves a very useful purpose in providing institutional care outside of the hospitals for the insane for patients whose mental affections are amenable to treatment, and whose recovery may be expedited by massage, good nursing, and other means, without the disadvantages of certification. It also serves as a sort of clearing-house, in allowing of observation of cases which may or may not improve after a short residence in the institution.

The hospital for the criminal insane is attached to the institution at Parramatta. It is said to be unsuitable in many respects, more particularly in regard to size and to equipment. A suggestion has been made that the adjacent Industrial School for Girls should be transferred to the Department of Public Health for the purpose of a criminal hospital, and that the inmates of the School should be accommodated elsewhere. So far this recommendation has not been given effect to. There were 54 persons in the Hospital for the Criminal Insane during the year 1914. Twenty-eight of the patients (24 males and 4 females) had been found guilty of murder, attempted murder or manslaughter. Six had been found guilty of assaults, etc., 5 of sexual offences, and 14 of offences against property, while one had been sentenced for false pretences. All these patients, with the exception of the four females mentioned under the murder class, were males.

An observation ward exists at the State Penitentiary at Long Bay. Persons who become insane in the gaols are placed in the first instance for observation in this ward. There were 30 fresh admissions during the year, and eight patients were under observation at the end of the preceding year. Of the 30 patients, three were found to be of sound mind, and were discharged, five were sent to the hospitals for the insane, 18 to the police courts, and 12 to the reception house.

The insane in the Broken Hill district are dealt with in the South Australian hospitals. During the year, there were 45 patients in this district. Six were discharged, seven died and 32 remained under treatment.

The form of insanity of the patients under treatment is given in a separate table. There were 1,196 cases of congenital or infantile mental deficiency, 293 of epileptic insanity, 144 of general paralysis of the insane, 196 of acute mania, 335 of chronic mania, 234 of recurrent mania, 1,467 of delusional mania, 203 of mania a potu, 44 of puerperal mania, and 86 of senile mania. Melancholia cases included 100 of the acute type, 273 of the chronic type, 73 of the recurrent type, 911 of the delusional type, 15 puerperal cases, 49 senile cases, and 13 alcoholic cases. In addition, there were 533 cases of primary dementia, 352 of secondary dementia, 271 of senile dementia, and 115 of dementia due to organic lesions of the brain.

The causes ascribed are divided into "moral," of which there were 132 cases, "physical," of which there were 773 cases, and "congenital and hereditary," of which there were 285. Alcoholic excess is entered as a cause in 221 cases, venereal diseases in 103, epilepsy in 77, pregnancy, parturition and the puerperal state in 23, and previous attacks in 237.

The length of residence in the hospitals for the insane is only given in connexion with the patients discharged during the year, or those dying. In the table dealing with this point, the patients are described as having recovered or having died. This use of the term recovered is unfortunate, inasmuch as the significance is that they were discharged without mental symptoms, but with a considerable chance of returning at a later date with fresh symptoms of insanity. The following is a table worked out from the figures given of the duration of the institutional treatment:

	Patients discharged.	Patients died.
Under 1 month..	3.5%	11.1%
Over 1 and under 6 months.. ..	41.9%	20.9%
Over 6 and under 12 months. ..	21.1%	10.4%
Over 1 and under 2 years	20.9%	12.6%
Over 2 and under 5 years	9.4%	14.9%
Over 5 and under 7 years	1.1%	5.1%
Over 7 and under 10 years	1.6%	6.6%
Over 10 and under 12 years.. ..	——	3.0%
Over 12 and under 15 years.. ..	0.4%	2.8%
Over 15 years	——	12.6%

The ages of the patients is given in actual figures, so that a clear conception of the frequency of recovery at a given age is not ascertainable, save after a calculation of the percentages. Of the total number of patients in the various hospitals, 23 were under 5 years of age, 74 under 10 years, and 159 under 15 years of age. This number probably includes a proportion of the congenital cases of imbecility and idiocy. Deducting from the total number of patients the number of patients in the Hospital for Imbeciles at Newcastle, it appears that 15.4% were between 20 and 30 years of age, 22.4% were between 30 and 40, 23.3% were between 40 and 50, 20% were between 50 and 60, and 11.2% were between 60 and 70. Of those who died during the year, 6% were between 20 and 30, 13% were between 30 and 40, 17.7% were between 40 and 50, 17.9% were between 50 and 60, 19.6% were between 60 and 70, 17.3% were between 70 and 80, and 6.2% were between 80 and 90 years of age.

Notice is given in the report of various changes in the staffs of the hospitals. Dr. G. E. Miles, the Medical Superintendent of the Hospital for the Insane at Rydalmere, retired after over 28 years' service. The value of his work is recognized in suitable terms. The death of Dr. L. L. Allen, Senior Medical Officer at Parramatta, is recorded with regret. Three junior medical officers resigned. Two matrons and 58 members of the general staff were granted leave of absence for the purpose of joining the Australian Expeditionary Forces. The total number of nurses, attendants, and servants at the various hospitals was 1,014.

In regard to the financial aspect of the work, it appears that the cost of maintenance at the various hospitals, etc., amounted to £257,603, while other expenses brought the total up to £269,612. On the other side, a sum of £44,147 was collected for the maintenance of patients, £1,793 was realized on the sale of fat and old stores, while £180 was received in respect to rent of land, making a total of £46,121. In addition, a balance of receipts over expenditure on the farm operations at the hospitals amounted to £6,368. The annual cost per patient, after deducting collections, worked out at £31 15s. 5d. This cost has gradually increased since 1906, when it was £22 12s. 4⅛d. In 1913 it was £33 3s. 10⅝d.

The Inspector-General refers to a Bill to amend the Lunacy Act which has been submitted to Parliament. The principal provisions of this Bill are the defining of the powers conferred in regard to the control of the insane under care outside the hospitals for the insane and the licensed institutions; the admission of voluntary patients into hospitals for the insane, etc.; the regulation of the treatment of insane persons in private houses, and the adoption of some of the recommendations of the English Commission on the Care of the Feeble-Minded.

The report contains other information of importance.

Abstracts from Current Medical Literature.

MEDICINE.

(92) The Value of Drugs as Blood-Pressure Elevators.

Allan Watson (*Practitioner*, April, 1915) records the results of his investigations to determine the effect of certain drugs on the systolic and diastolic pressure of healthy individuals. The object of the research was to compare the values of these drugs as remedies for combating dangerous hypotension. His observations were made on persons with normal arterial tension. Adrenalin was found to act very rapidly on both systolic and diastolic pressures; a marked elevation of the former occurred, and an even more marked depression of the latter. It caused as well faintness, tremulousness, palpitation and abnormally deep respirations. Possibly the effect of the drug was due to the production of a temporary aortic regurgitation. Adrenalin is a dangerous drug. It should always be used with caution, and never as a general blood-pressure elevator. Eserine was the only drug found to elevate both the systolic and diastolic pressures; a transitory elevation of the former and a more persistent elevation of the latter were produced. The pulse-rate was unaltered, and the force of the cardiac contraction was never appreciably increased. It caused nausea, vomiting and faintness, and accordingly its use in cases of hypo-tension is not advisable. Pituitary extract was found to have no pressor effect in the author's experiments. He suggests that its effect in cases of marked hypotension might be different, but he considers it of doubtful value. Tyramine caused considerable elevation of the systolic pressure; this effect was apparent in from two to seven minutes, and lasted for from ten to fifty minutes. It did not affect the diastolic pressure appreciably, and, except for slight transitory palpitation on two occasions, it caused no unpleasant symptoms. It appears to be a safe and effective blood-pressure elevator. Atropine, camphor, cotarnine, digitoxin, ergotoxin and strychnine appeared to be of no value whatever as blood-pressure elevators.

(93) The Relationship of Pulmonary Tuberculosis in Childhood to the Phthisis of Adult Life.

J. P. Cullen (*Practitioner*, April, 1915), after describing the X-ray appearances of disease of the hilum and the two methods of infection, aerogenic and by the alimentary canal, concludes that in both adult and infantile tubercle the path of infection is identical. In both it is at first pulmonary, and the point of entry is the vicinity of the terminal bronchiole. In the adult, possibly owing to blocking of the lymph paths by a previous lymphangitis (tuberculous or due to mechanical irritation, *e.g.*, dust) the bacilli at first remain localized to the point of entry, and a bronchiolitis and bronchopneumonia are produced which undergo caseation, fibrosis, calcification, or softening. In childhood, the above agencies are not called so much into play, so the infection does not remain local; lymphatic involvement takes place and the glands and lymphatics themselves are definitely infected. To suppose a retrograde flow of lymph is unnecessary and is contrary to anatomical teaching. The path of infection is centripetal, and the signs will depend on where arrest of the bacilli occurs. In the adult type this takes place at the beginning of its journey, leading to direct implication of a mucous surface. Local symptoms, *e.g.*, cough, expectoration, hæmoptysis, are those for which the patient seeks advice. General symptoms appear later. In childhood, local symptoms are indefinite. There may be reflex cough and vomiting, perhaps due to irritation of the vagus. General symptoms are more marked. The patient is languid, anæmic, perhaps suffers from night sweats and slight evening pyrexia, and growth and nutrition are interfered with. Physical signs are not obvious, owing to the depth of the lesions from the surface. There may be discerned enlargement of the oval interspinous area of dulness, with prominent venules over the region of the first to the fifth dorsal spines, crepitations in the nipple region, and harsh or cog-wheel sounds at the apices. Diagnosis may be only attainable by X-rays. The author affirms that pressure signs and symptoms may safely be disregarded in practice. The affection in childhood may remain limited to the lymphatic paths, in which case the prognosis is good, provided the disease is recognized early and treated by cod-liver oil and fresh air. Wrongly diagnosed, or diagnosed too late, the parenchyma of the lung is affected, and the case passes into the adult variety with far gloomier prospects for recovery.

(94) Tertiary Syphilis of the Liver.

McCrae (*Johns Hopkins Hosp. Bull.*, May, 1915) draws attention to the comparative paucity of references to tertiary syphilis of the liver in the literature. He holds that it is not uncommonly met with in practice, but that it is often not recognized. As regards the ætiology of this condition, he finds that it is a disease particularly of adult life, the largest number of cases occurring between the ages of 20 and 40. It is not a disease of advanced life. Of other factors, alcohol seems to take the first place. About one-third of the cases he has studied had used alcohol to excess. He infers from this, not that syphilis attacked a cirrhotic liver, but that a liver which has been irritated by large amounts of alcohol is more likely to be affected by a syphilitic process. Of the clinical features of this condition, loss of weight was one of the most noteworthy. Jaundice occurred in about half the cases. Another general feature was fever, which was present in all but eight of a series of 56 cases. In the majority of the cases the temperature did not exceed 101°. The blood showed a slight degree of secondary anæmia. The average red-cell count was about 4,500,000, and the hæmoglobin estimation was about 70%. There was no leucocytosis, and the differential leucocytic count showed nothing abnormal. Ascites occurred in 27 of the cases, but only 13 required tapping. This emphasizes the possibility of the ascitic fluid disappearing under treatment. The spleen was palpable in half the cases; at times the enlargement was very marked, and had led to the diagnosis of splenic anæmia. In reference to the changes in the liver itself, a study of this showed that the majority of the cases fall into one of three groups: (1) With general enlargement of the liver, the surface of which is comparatively smooth. There were 27 cases in this group. (2) With definite nodules on the surface of the liver. There were 21 cases in this group. (3) With marked general enlargement of the liver and very marked prominences. This occurred in 11 cases. As regards the diagnosis, the hepatic features may be missed entirely. The liver condition may be overlooked if there be coincident cardiac or nervous disease. The most important mistake in diagnosis is when the condition is confused with tuberculosis. At times, abdominal disease is recognized, but its exact nature is not determined. Tuberculous peritonitis, carcinoma of the peritoneum, and carcinoma of the stomach are the most probable diagnoses. In the third place, the hepatic disease may be recognized, but its nature is not determined. A common error is to regard the condition as an ordinary cirrhosis of the liver; abscess of the liver and gall-stones have also been suggested. Several patients of this series had been operated upon for gall-stones. It is important to remember that the left lobe of the liver is often involved to a much greater extent than the right, especially in syphilis. Another important point is a history of ascites, which has subsided spontaneously or disappeared after tapping, to re-appear some time later. Another point worthy of attention is the therapeutic test. After iodide is taken, a remarkable feature is the rapidity with which the temperature falls to normal. In the majority of cases, this occurs in two days, and rarely takes longer than five. The enlargement of the liver may disappear very rapidly. Early diagnosis is important to save the patient from the permanent damage to the liver. As regards treatment, iodide of potassium is the best drug to use. In doses of 20 grs., three times a day, the condition may clear up completely. Several of the patients had been treated with salvarsan, but without any apparent effect on the liver. Tapping should be done whenever there is a collection of fluid.

(95) Arterio-Sclerosis and Mental Efficiency.

L. F. Bishop (*Medical Times*, June, 1915) describes arterio-sclerosis as a

disease involving, more or less, all the structures of the body; a disease of the cells, which may, by this cause, be destroyed and replaced by scar tissue. Thus is caused a hardening and shrinking of the organs. The author considers that, while it is sometimes caused by auto-intoxication, it is more often due to a change in the body cells themselves, brought about by nervous shock or strain, or by a severe illness or an acute poisoning. The cells can then no longer react properly to food which should nourish them. When a man is worried or mentally overstrained, he may become sensitive to proteins of meat, fish or eggs, and, when he goes on eating them, some of his body cells are destroyed and his organs damaged, more particularly the heart and blood vessels. The brain cells are most often affected indirectly. The high blood pressure and poisoning from poorly functionating organs, and the lack of reserve strength lead to impairment of mental efficiency and a deterioration of the man's ability. The brain is not directly damaged, except when the disease has gone on to the impairment of the circulation in the brain. Cardio-vascular disease has increased in mortality by 100% in 30 years. Hence it is necessary to examine periodically people supposed to be healthy, especially if they have suffered from mental strain or worry, in order to detect a sensitiveness to damage by natural foods at an early date, and to discover, for each individual, his proper diet and mode of life.

NEUROLOGY.

(96) Compression of the Spinal Cord by Extra-dural Tumour, with Intermittent Paraplegia.

Babinski, Enriquez and Jumentie (*Rev. Neurol.*, XXII., Feb. 15, 1914) describe the case of a man, aged 45 years, who developed neuralgic pain in the right VIII. intercostal space six years previously. This lasted for about a week, then disappeared, but recurred after two months. About two years later he noticed weakness in the left leg, which followed a more severe attack of pain. The weakness disappeared in a fortnight, but returned after each attack of pain, until a year later, when, after a more severe attack of pain, the leg became completely paralysed, and the right leg became insensible to heat and pain. Complete recovery took place about three weeks later, but intense pain again developed, and both legs became paralysed. The paralysis persisted for about a month, and then gradually improved. When examined in July, 1912, he could walk without assistance, but the gait was unsteady, the left leg was weak, and the right leg not much affected; both arms were normal. There was a double extensor response, the knees and ankle jerks were exaggerated, the middle and lower abdominal reflexes were absent, and the right cremasteric reflex was absent, the left weak, and the epigastric reflex was weak on the right side. The third, fourth, and fifth sacral roots had normal sensibility, but there was hypo-anæsthesia, especially on the right side above this, extending as far up as the VIII. dorsal root. On July 14 he developed violent pain in the right side and lumbar region; the legs became paralysed, and complete retention of urine ensued. A tumour at the level of the VIII., IX., X. and XI. dorsal segments was diagnosed, and a laminectomy was attempted, but the patient collapsed during the operation, and died an hour later. At the autopsy an elongated tumour, 8 cm. in length, was found outside the dura mater. It proved to be a round-celled sarcoma.

(97) Pseudo-hypertrophic Muscular Dystrophy with Amentia.

Fearnsides (*Proc. Roy. Soc. of Med.*, April, 1915) showed a boy, aged 10 years, a typical case of pseudo-hypertrophic muscular dystrophy, to the Section for the Study of Disease in Children. His father and mother were normal, and there was no history of myopathy. The patient was the youngest of 4 children; all the others were healthy. He had always been backward in walking, and was so mentally. For a short time, some years ago, he attended school. He was unable to sit up straight, and could not raise himself from the recumbent to the sitting posture without the aid of his hands. He stood unsteadily on a wide base, and walked with a waddling gait. The muscles of the calves, the infraspinati, the outer parts of the lumbar mass of the erector spinæ, the lumbar attachments of the latissimus dorsi muscles, and the axillary portions of the serratus magnus muscles were symmetrically hypertrophied and defective in power. The pectoralis major, deltoid, biceps, triceps, the lower half of the trapezius, and the glutei, vasti, and anterior tibial muscles on both sides were small and paretic. The rhomboids, supra-spinati, and the distal muscles of the extremities were proportionately better developed. There was little lordosis; the grasp was feeble. The dorsi-flexors of the ankles were weak, but there was little talipes equinus. The muscles of the neck were fairly developed, and those of the face unaffected. The abdominal muscles appeared normal. The knee jerks could just be obtained, and doubtful ankle jerks were present. No plantar responses were elicited, and the abdominal reflexes were brisk. The fingers were long and tapering; the metatarsals were hyper-extended, and the phalanges of the toes distally flexed. He had never been subject to fits. The head was irregularly shaped, and measures 20 inches in circumference, 13½ inches from nasion to inion, and the vertical bimeatal distance was 13 inches. The right frontal bone was prominent, and showed a curious bump surrounding a scar. The bridge of the nose, palate and ears were well developed. He lolled with his tongue, and constantly made grimaces. Mentally he was backward; he could not read, did not know the alphabet, and could not state where he lived, what his age was, nor the ages of his brothers. He could only count up to 4, and did not know what twice 2 was. He named and knew the uses of common objects; he was interested in pictures, and could name the objects they depicted. He was musical, and could sing and whistle.

(98) Epilepsy Complicated by a Traumatic Neurosis.

Steinach (*Journ. Nerv. and Mental Disease*, May, 1915) records a case of this nature in a single man, aged 22, a clerk by occupation. He was born after a difficult labour, with instrumental intervention, and had been brought up on artificial foods. A slight backwardness in learning to talk and walk, and a tendency to stammer while learning to speak, were the only unusual features of his infancy. When ten years old he was hit on the head with a baseball bat over the left temple; the wound bled profusely, but he did not lose consciousness. Two years later he had the first fit. In this he was completely unconscious, and passed urine. Fifteen minutes later he had regained consciousness, and was able to go to school. Under treatment the fits subsided, but they returned when treatment was suspended. The fits were of the *grand mal* type, and occurred usually at night. The patient passed urine, and bit his tongue; at times he vomited immediately afterwards. The attacks recurred at intervals of from 3 to 6 months, but he had had as many as 3 in one day. Two days before the patient came under Steinach, he was struck on the top of the head while coming out of an elevator; the accident was rather trivial, and did not affect the patient until there was some talk of a suit against the company, but this was settled. Subsequently the patient had had peculiar attacks in addition to the fits already described. These latter were not accompanied by any loss of consciousness; his left leg was drawn up and abducted, and his left hand was flexed. They became very frequent, sometimes as many as 5 or 6 in one day. Physical examination showed the left pupil a little larger than the right; both reacted to light and accommodation, and there was no abnormality of the motility or fields of vision. Otherwise physical examination was negative. The question in this case was whether it was a case of Jacksonian epilepsy, in which the convulsions were attributable to a right-sided lesion from *contre-coup*, or a case of epilepsy upon which were engrafted hysteroid attacks as an expression of a traumatic neurosis. The underlying unstable neurotic disposition accompanying the epilepsy was a ready soil for the neurosis. During the 10 years his major attacks had lasted he was repeatedly questioned by various physicians about blows on the head as being a possible cause for his epilepsy. When he received the blow on the head, the repeated questioning having suggested the causal relationship to convulsive attack, they promptly appeared in the left arm and leg, showing their purely hysterical character.

British Medical Association News.

MEDICO-POLITICAL.

A meeting of the Council of the Victorian Branch was held on August 25 at the Medical Society Hall, East Melbourne, Dr. Honman (the President) in the chair.

The Ethical Committee submitted a report dealing with a number of questions concerning advertising in country newspapers.

Dr. Anderson begged to be relieved of his position as convener of the Ethical Committee, and Dr. Kenny was appointed in his stead.

Forty-eight additional replies had been received to the War Census, making a total of 598.

A letter was received from the Secretary of the Lands Department, stating that Dr. Mollison would be appointed trustee of the Medical Society Hall, in place of Dr. Williams (deceased).

Dr. Honman reported that he had waited upon the Minister of Defence, who had given him the assurance that in the present epidemic of cerebro-spinal meningitis the medical officer would take precedence of the military officer, and he directed the Director-General of Medical Services to notify the Principal Medical Officers of each State of this decision. He also said that civilians offering for three weeks' service in camp would not be compelled to undertake further duties, and that the men on the reserve would not be mobilized.

A number of letters were received, showing that disputes had arisen between medical officers and their lodges. These questions were referred to the War Organization Committee for advice.

The Scientific Sub-Committee announced that at the next meeting Dr. R. Wallace would read a paper on "Lessons Learnt from Recent Surgical Experiences with the Armies in France," that Dr. A. E. Taylor would read a paper on "Poisoning by Foul Air," and would demonstrate an apparatus for combating poisonous gases.

Dr. A. S. Rubinowitsch was elected a member of the Branch.

The following is an analysis of the replies received by the Honorary Secretary of the New South Wales Branch to the enquiries addressed to members in respect to military service. The circular enquiring of members whether they would be prepared to undertake one or other form of service was sent on July 25, 1915. On August 27, 1915, replies had been received from 400 members. The form of service which the members are prepared to accept is shown in each sub-division.

1. Military Service Abroad.
   - (*a*) With the Imperial Forces 61
   - (*b*) With the Australian Forces—
     - *i.* For the duration of the War 62
     - *ii.* For a period of not less than twelve months 66
     - *iii.* As Surgeon of Hospital, Transport or Hospital Ship 64
2. Whole-Time Military Service in the Commonwealth.
   - (*a*) For a Shore Period—
     - *i.* In Camp 49
     - *ii.* In Field Hospital 50
     - *iii.* In Hospital for Wounded Soldiers.. 53
   - (*b*) For the Period of the War—
     - *i.* In Camp 34
     - *ii.* In Field Hospital 34
     - *iii.* In Hospital for Wounded Soldiers.. 37
3. Whole-Time Military Service in New South Wales.
   - (*a*) For a Short Period—
     - *i.* In Camp 71
     - *ii.* In Field Hospital 72
     - *iii.* In Hospital for Wounded Soldiers.. 75
   - (*b*) For the Period of the War—
     - *i.* In Camp 34
     - *ii.* In Field Hospital 35
     - *iii.* In Hospital for Wounded Soldiers.. 41
4. Part-Time Daily Military Service in New South Wales.. 132
5. To Attend Convalescent Soldiers in the District, on terms approved by N.S.W. Branch, British Medical Association 294
6. For Duty or Extra Duty in—
   - (*a*) University Teaching Work 78
   - (*b*) Hospital Teaching Work 103
   - (*c*) Hospital Surgical Practice 122
   - (*d*) Hospital Medical Practice.. 142
   - (*e*) Hospital Special Practice 75
7. Willing to Make Arrangements to Enable one or more Colleagues in District to Proceed on Military Service 177

The following have been nominated for election to the New South Wales Branch:—

Dr. Arthur Edward Machin, Royal North Shore Hospital.
Dr. S. R. Stafford, Women's Hospital, Surry Hills.

The following resolutions were adopted by the Council of the New Zealand Branch, at a meeting held early in August:—

(1) That the New Zealand Branch of the British Medical Association will endeavour to assist the authorities to make up the shortage in the staffs of general hospitals, and urges most strongly that sufficient recently-qualified medical men be retained in New Zealand as house surgeons to public hospitals, to maintain them at their original numerical strength.

(2) That it is impossible to promise to make up the shortage of medical men in country districts, but each Division will, as far as possible, render assistance in such circumstances as is now being done, provided that no doctor is asked to leave his district.

(3) That the Branch will endeavour to render temporary assistance at camps and hospitals if extra help is wanted by the military authorities, provided that doctors' ordinary duties are not unduly interfered with, but the Branch deprecates the multiplication of numerous small hospitals.

(4) This Branch strongly recommends that a central military hospital be provided in Wellington on some suitable site, and in such manner as to be easily capable of extension, and providing accommodation for patients, nurses, etc. The Branch considers this plan to be far more suitable, economical, and conveniently worked, both from the patients' and staff's point of view, than the number of small hospitals scattered about the cities and suburbs. As soon as possible, sick and wounded returned soldiers should be sent from this clearing hospital to their own districts.

(5) That it be a recommendation that invalided sick and wounded soldiers be placed in separate wards or convalescent homes under military discipline, it being found that want of such control is seriously affecting the general management and discipline in civil hospitals.

(6) That those medical officers who have already offered their services in response to the request of the Imperial Government for 100 medical men should at once be definitely accepted, as in several cases steps have been taken by these men to give up their practice, and the inconvenience and uncertainty to which they have been subjected must in future seriously interfere with recruiting from the ranks of the medical profession.

(7) That in the opinion of the Branch it is desirable to send home one or more hospital units in place of sending home 100 medical officers asked for by the Imperial authorities. In view of the lack of definite information obtainable as to the status, length of service, training and general disposition of the latter proposal, the Branch is of opinion that more good would accrue by following out the proposal to send one or more hospital units. It would thus be possible to supply periodic reinforcements in the

medical services, thus permitting those officers engaged to return to New Zealand at periods of say one year, if such is deemed advisable, and for other officers in this way to take their places.

(8) That the Council of the New Zealand Branch directs the attention of members of the medical profession to the probability that the services of all those available will shortly be urgently required for the New Zealand medical service itself, and the council deprecates medical men applying for outside service.

(9) That allowing for urgent military requirements the authorities be asked to furnish definite plans for medical service as early as possible, so that the medical profession may know what is required of it.

The Honorary Secretary of the New South Wales Branch has requested us to call the attention of members to the notice which has appeared in the Diary for the Month regarding nominations of members for election as members of the Federal Committee. The nominations must be in the hands of the Honorary Secretary of the Branch on or before September 10, 1915. Members of the Federal Committee hold office for twelve months from the first day of January.

BELGIAN DOCTOR'S RELIEF FUND.

Tasmania.

The Treasurer of the Tasmanian Branch Fund has requested us to publish the second list of subscriptions (see *The Medical Journal of Australia*, May 22, 1915, p. 493).

	£	s.	d.
Amount previously acknowledged	30	12	6
Dr. Addison, E. J. (additional subscription)	0	10	6
„ Cole, F.	2	2	0
„ Damman, T. W.	0	10	6
„ Goddard, T. H.	0	10	0
„ Hamilton, A. J.	1	1	0
„ Hayward, A. E.	1	1	0
„ Ireland, E. W. J.	1	1	0
„ Lines, D. H. E.	2	2	0
„ Love, J.	1	0	0
„ Sprott, G.	3	3	0
„ Walker, H. F.	0	10	6
„ Walpole, G. A.	1	1	0
Small Sums and Exchange not charged by Bank	1	14	8
Total	£46	19	8

Queensland.

The third list of subscriptions received by the Treasurer of the Queensland Branch to the Belgian Doctor's Relief Fund contained 16 names. The amount has been handed to the Treasurer of the New South Wales Branch Fund.

	£	s.	d.
Amount previously acknowledged	23	12	6
Dr. Bourne, E. E., Brisbane (July contribution)	0	10	0
„ Cameron, J. A., Ipswich (August contribution)	2	0	6
„ Carvosso, A. B., Brisbane (August contribution)	1	1	0
„ Cooper, L., Brisbane (August contribution)	2	0	0
„ Davidson, G., Sandgate (July contribution)	1	1	0
„ Harlin, R., Killarney (August contribution)	2	2	6
„ Hemsley, J. C., Brisbane (August contribution)	1	1	0
„ Hill, R. P., Isisford (May and June contribution)	2	2	0
„ McKenna, T. R., Brisbane (July contribution)	1	0	0
„ Priestley, H., Townsville (August contribution)	1	1	0
„ Robertson, W. N., Brisbane (July and August contribution)	8	0	0
„ Roe, A. S., Brisbane (August contribution)	1	1	0
„ Turner, A. J., Brisbane (August contribution)	2	2	0
Carried forward	48	14	6
„ Wallace, R., Rosewood (July, August and September contributions)	3	0	6
„ Wallace, T. I., Longreach (August contribution)	1	1	6
Total	£52	16	6

Medical Societies.

(Affiliated with the British Medical Association).

NORTH-EASTERN MEDICAL ASSOCIATION (NEW SOUTH WALES).

A meeting of the North-Eastern Medical Association was held at Tattersall's Hotel, Casino, New South Wales, on August 12, 1915, Dr. E. Page (the President) in the chair.

Arising out of the correspondence read by the Honorary Secretary, it was resolved that a member be informed that the Association was opposed to the continuation of an agreement with the Federal Lodge, on the ground that the terms of the agreement were not in accord with the policy of the Association. The member referred to had intimated that he was prepared to give three months' notice to terminate this agreement. It was further announced that the Lodges at Mullumbimby had decided to sign the Common Form of Agreement as from July 1, 1915.

It was resolved, on the motion of Dr. Cahill, that Dr. Graham be appointed Honorary Secretary and Treasurer.

The following motion was proposed by Dr. Evans, seconded by Dr. Van Epen, and carried:—

That it be a suggestion to the Council of the Branch that applicants for admission to Friendly Societies sign a declaration that their income is below £208, and that this declaration be embodied in the certificate.

The following motions were submitted to the meeting:—

That during the currency of the war, in towns where a practitioner is isolated, if he be unable to continue his work on account of illness, or if he be in need of assistance, which would have been available prior to the war, he shall, on application to the Secretary, receive supply of assistance from a list of medical practitioners willing to render same.

(*a*) Such list to be arranged and supply taken from it in rotation.

(*b*) Fees for such work done to be pooled and divided, say every three months, on an average per mile travelled, between the medical men rendering assistance during that period.

(*c*) All the colleagues of the practitioner so rendering assistance who have signified their willingness to work under the scheme, undertake to attend to his work, free of any charges, between them until they are notified by the Secretary of his return.

(*d*) As far as possible no man is to be absent from his own practice under this scheme for more than two days at a time.

(*e*) In the case of a long trip, the reduction of the fee (including mileage)—if necessary—on account of present conditions, be left to the discretion of the two practitioners immediately concerned.

(*f*) All practitioners residing in the towns affected by this scheme to be notified and asked to signify their willingness to conform with these regulations, in order that the scheme may be immediately set in operation.

That the members of this Association agree to preserve intact as far as praticable the practice of men absent at the war, and with this end in view agree—

(*a*) That they shall hang a placard in their waiting rooms to this effect—

"Any Patients who were formerly patients of Dr. ....., who has now gone to the war, are requested to mention this fact to Dr. .... when consulting him, as he and his col-

leagues have agreed to attend his patients during his absence."

(*b*) That the cost of printing these placards be borne by the Association and be supplied to all other practitioners in the town upon the Secretary being notified by a practitioner of his departure for the war.

(*c*) That practitioners going to the war be at liberty to circularize their patients as to this arrangement before their departure, and the form of circular to be as follows:—

"During my absence on war duty, the following doctors have agreed to attend my patients. You are requested, therefore, to notify any doctor you consult during my absence that you were my patient at the time of my departure."

(*d*) That in Friendly Society practice, the list of the man going to the war be divided equally between the other men in the town who are willing to undertake his Lodge work, such list to be returned intact upon his return, provided that he has deposited a copy of his list of members with the Secretary prior to his departure. All fees in connexion with Lodge work to go to the locum tenentes.

(*e*) That in the case of private practice, the fees be divided in the ratio of 60% to locum and 40% to owner of practice.

(*f*) That these regulations do not apply to military or Government appointments.

That the above scheme be submitted to the absent members of the North-Eastern Medical Association and to the Council of the New South Wales Branch, with a request that it be submitted to the other local associations.

A roster for the supply of assistance to isolated towns from Murwillumbah, Mullumbimby, Bangalow, Ballina, Lismore and Grafton was also suggested.

Public Health.

INFECTIVE DISEASES IN QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the week ending August 21, 1915:—

Disease.	No. of Cases.
Diphtheria	33
Malaria	27
Varicella	16
Enteric Fever	10
Scarlatina	8
Pulmonary Tuberculosis	8
Erysipelas	5
Cerebro-Spinal Meningitis	2
Total	109

THE HEALTH OF VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the week ending August 26, 1915:—

	Metropolitan. Cs.	Dths.	Rest of State. Cs.	Dths.	Totals. Cs.	Dths.
Diphtheria	45	3	28	4	73	7
Scarlatina	10	0	13	0	23	0
Enteric Fever	—	—	11	1	11	1
Pulmonary Tuberculosis	21	8	10	4	31	12

The total number of cases of epidemic cerebro-spinal meningitis reported from April 17, 1915, to August 26, 1915, is as follows:—

	Metropolitan. Cases.	Rural. Cases.	Total. Cases.
Military Cases	—	—	98
Civil Cases	53	23	76
Totals	151	23	174

The disease has been notified from 15 separate municipal districts. The number of deaths will be announced as soon as the registrar's returns have been issued. From the published accounts in the newspapers it appears that at least 76 deaths have taken place.

Naval and Military News.

It is our painful duty to record the death of Captain A. W. Scot Skirving. The announcement was made in last week's issue of the fact that he had been wounded while serving in the 5th Royal Irish Fusiliers. The report of his death was received in Sydney on August 26, 1915. It appears that he was wounded in action at Suvla Bay, at Gallipoli.

It is with great regret that we have to record the death of Captain A. W. H. Langley, of Ballarat. Dr. Langley was on military duty in the training camp at Ballarat, and contracted epidemic cerebro-spinal meningitis, from which he died on August 26, 1915.

The death of Major Thomas Copeland Savage, after an illness of three weeks' duration, is reported from Cairo. Major Savage was an Auckland practitioner, and on joining the New Zealand Expeditionary Forces, was appointed second in command of the No. 2 Stationary Hospital. Dr. Savage was a graduate of the London University, having taken his degree in medicine at University College. He took his degree in 1900, and in 1901 passed the Fellowship of the Royal College of Surgeons, of England. After holding some house appointments at University College Hospital, he came to New Zealand, and settled in Auckland. He was a prominent member of the Auckland Division of the New Zealand Branch of the British Medical Association, and filled several official posts, including that of President. He was a man who was greatly respected by his colleagues and by his patients. He was a brilliant surgeon, and contributed a number of important articles on various surgical subjects to medical literature. Dr. Savage was only 41 years of age. He leaves a widow and four children.

During the course of the week two additional casualties among the A.A.M.C. have been reported.

Lieutenant R. N. Howse, V.C., who was previously reported ill, has now been placed on the list of the wounded.

Captain J. W. B. Bean's name appeared for the second time in the list of wounded on August 26, 1915.

On August 27, 1915, the official announcement was published that Lieutenant-Colonel A. E. Perkins, Principal Medical Officer of the Second Military District, had been awarded the Distinguished Service Order.

His Excellency the Governor-General, acting with the advice of the Federal Executive Council, has been pleased to approve of Lieutenant-Colonel A. E. Shepherd, Principal Medical Officer (temporarily) 4th Military District, being Deputy Director-General of Medical Services (temporarily), Head-Quarters, and being granted the temporary rank of Colonel whilst holding this appointment, with pay at the rate of £820 per annum, inclusive of all allowances except travelling.

Dated 16th August, 1915.

G. F. PEARCE,
Minister of State for Defence.

Department of Defence,
Ex. Min. No. 663. Melbourne, 21st August, 1915.

THE FIRST AUSTRALIAN GENERAL HOSPITAL.

It has long been an open secret that considerable friction has existed between the senior officers in authority in the First Australian General Hospital. On August 19, 1915, Mr. Mathews asked for information in the House of Representatives in connexion with the rumour that Lieutenant-Colonel Ramsay Smith, Lieutenant-Colonel J. W. Barrett and Matron Bell were being sent back to Australia on a charge of mismanagement, "if not worse." Mr. Jensen was unable to give the information sought. Subsequently an official report has been issued to the effect that early in July the High Commissioner received a report from Sir Alfred Keogh, Director-General of Medical Services of Great Britain, that serious complaints had been made regarding the conduct of the Hospital at Cairo. Sir Alfred considered that these complaints justified an immediate investigation. The Army Council was invited to undertake the enquiry and to submit recommendations to the Commonwealth Gov-

ernment. The facts elicited at the War Office enquiry have not been divulged, but it has been announced that a recommendation has been received to the effect that Lieutenant-Colonel Ramsay Smith and Matron Bell be recalled to Australia, and that Lieutenant-Colonel J. W. Barrett be withdrawn from military duty. As a result of these recommendations, Lieutenant-Colonel Ramsay Smith and Matron Bell have been recalled by the Commonwealth Government, and will be sent back by the first mail steamer, while Lieutenant-Colonel Barrett may be permitted to remain in Egypt, in order that he may devote his time to the Australian Branches of the Red Cross Society. This suggestion has been made, and the matter has been brought to the notice of the Red Cross Society, but we understand that it will not be acted on. On August 26, 1915, the matter was again discussed in the Senate, and a very guarded reply was elicited from the Minister. Some objection was taken to the proposal that Dr. Barrett should be allowed to remain in Egypt after having been withdrawn from military duty. The Minister has announced that the Ministry will decide after perusing the reports whether these documents should be made public.

In the meantime, Colonel Fetherston, the Director-General of Medical Services, is on his way to Egypt, for the purpose of adjusting the difficulties.

The appointment of Lieutenant-Colonel H. Maudsley as Officer-in-Command and of Major W. E. Summons as Registrar has been announced.

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The Sub-Committee of the Federal Parliamentary War Committee held a meeting on August 19, 1915, for the purpose of considering a scheme for the organization of the work of attendance on returned sick and wounded soldiers. Dr. A. Honman (President of the Victorian Branch), with Drs. A. L. Kenny and R. L. McAdam, were present, at the invitation of the Chairman of the Committee. A scheme was drafted and submitted to the full committee. The recommendations embodied in the scheme have received the approval of both the Federal Parliamentary War Committee and the Minister for Defence.

The following are the chief provisions:—

A Federal Medical Committee is to be appointed, to consist of six members of the British Medical Association, who shall be the Presidents of the various Branches.

The names of the members of the Federal Medical Committee shall be submitted for confirmation to the Federal War Committee.

The Federal Medical Committee, immediately on formation, is to prepare recommendations and a general outline and plan of work, for submission to the Federal War Committee.

Subsequently, the Federal Medical Committee shall meet as required by the Federal War Committee, and shall submit its recommendations for the approval of the latter.

A separate Medical Committee shall be appointed for each State, to do the work of that State, and shall consist of three members nominated by the Council of the Branch of the British Medical Association. One of the members shall be the President of the Branch.

The Branch Presidents shall have power to appoint proxies for the meetings of the Federal Medical Committee and the State Medical Committee. The State Medical Committees shall have power to consult experts in connexion with the following matters: (*a*) industrial training, (*b*) technical training, (*c*) teaching of the blind, (*d*) massage and allied subjects, and (*e*) such other matters as may be deemed necessary.

It is recommended that the Defence Department should send each soldier, immediately on his discharge, with a certificate and statement bearing full particulars of his case, to the President of the State Medical Committee. Where this is not possible the Committee may receive the certificates and other particulars directly from the Department.

It shall be the duty of the State Medical Committee to examine patients and to make recommendations as to treatment to the State Council. It is suggested that the State Medical Committees confer, as soon as possible, with the members of its consultative expert committees, to arrange for investigation of cases, and to frame an estimate of requirements.

The Federal War Committee shall appoint an administrative officer to assist the various State Councils in conducting the work.

The Federal War Committee has considered generally the question of finance, and, while it does not feel in a position yet to say how much money is likely to be required for the important matter under consideration, it is of opinion the supply of funds is not likely to present insuperable difficulties. It is clear that the cost of such work will be a suitable charge on the patriotic funds already raised or to be raised. The State Councils will be expected to make the necessary arrangements to that end. The cost of treatment and equipment, as approved by the State Councils, shall be debited to the moneys placed under their control. Should it be found necessary to supplement the amount made available from the patriotic funds, the Federal War Committee will consider and report accordingly.

The Federal War Committee has expressed its deep sense of appreciation of the ready response of, and the great assistance rendered by, the doctors who attended Sub-Committees, and the profession generally.

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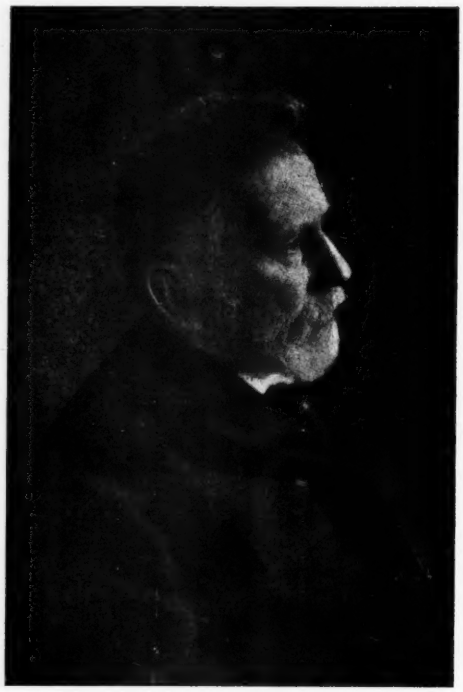
Obituary.

PAUL EHRLICH.

In the notices communicating the fact of the sudden death of Paul Ehrlich, the Australian daily newspapers associated him with the discovery of "606." Important as this discovery undoubtedly was, Ehrlich's position in the scientific work did not depend on it, and, indeed, had this work been his chief achievement, it is doubtful whether we would be justified in speaking of the Frankfurt savant as one of the greatest scientists of his time. It is not necessary to deal in this place and at this time with the personal attributes of the man, and, in view of the incomprehensible attitude which he adopted in the present crisis of the world's destinies, we would fain draw a veil over this aspect of his personality.

It is said of Ehrlich that he was an indifferent student at the University, and that he experienced failure at his examinations on more than one occasion. At an early date he demonstrated to the medical world that, whatever might be in store for him, he was quite unwilling to become orthodox, and that new fields of activity and fresh ideas would govern his career. Robert Koch failed to understand why Ehrlich devoted so much time and energy to test-tubes and colour reactions in the days when he filled junior posts at Berlin. While the former was burying himself in researches dealing with the causes of infective processes, the latter was experimenting, or, as his critics said, playing with stains and reagents, and speculating as to the significance of the reactions between living tissues and various groups of chemical compounds. His first great work was connected with the study of blood cells. It is no exaggeration to say that had he left his hæmatological work undone, our knowledge of the origin, functions and classification of the corpuscles would have remained far behind what it has developed into. In the course of his early work he gave evidence of a peculiar genius for evolving theories which appeared highly plausible, but for which he could not adduce any proof. This caused much of his work to be questioned and even refused, but anyone who had been in the position of following his arguments and watching the progress of his experimental work, recognized that he never confused a working theory with proven facts and that he was always willing to push the theory aside in favour of a doctrine based on observed phenomena. During the course of his observations, he was struck with the different types of granulation of the various forms of leucocytes. While his continued experiments led him to introduce the terms acidophile, neutrophile and basophile granules, he allowed his phantasy to suggest that the protoplasm of all cells must have a varying affinity for oxygen, and he therefore suggested that cytoplasm consisted either of a substance which attracted oxygen, which he called protoplasm, or of one which exerted a negative chemiotaxis to oxygen, which he named paraplasm. There was no experimental evidence for this assumption, and yet it is highly probable that the cellular contents have both the function of attracting oxygen and that of repelling it.

The ingenuity displayed in his hæmatological work gained for him a firm and great reputation throughout the scientific world. He then turned his attention to the processes taking place within the animal organism in the production of immunity, and, in the course of this work, the genius of the man found a wide and ample scope. Very shortly after von Behring, Tizzoni and Kitasato had announced the fact that the serum of animals immunized against diphtheria and tetanus protected other animals against the fatal effects of these diseases, the question of the mechanism of immunity began to attract considerable attention. Ehrlich sought for means to analyse the phenomena of the neutralization of toxin by antitoxin, and recognized in Bordet's hæmolysis experiments the opportunity sought. His classical researches with Morgenroth on the nature of hæmolysin led to the formulation of his side-chain theory, on which so much has been written and spoken. The fundamental conceptions of this extremely complicated and difficult subject were regarded at first as something too problematic to command general acceptance, save by a few biochemists. In order to render his meaning clear to others, Ehrlich set up a graphic scheme of the receptors, which he differentiated from one another, with their haptophoric, cytophoric and other groups. The fact that this scheme was set up led many biologists to regard the conception of immunity as being dependent on some structural body, instead of being dependent on the physico-chemical properties of certain products of blood corpuscles, bacteria, etc. Ehrlich sought to explain these substances, as he regarded them, in a manner similar to that adopted by chemists to formulate the chemical constitution of organic bodies, like the derivatives of benzol. The basis of Ehrlich's work on immunity has stood the test of time, but it must be admitted that many of the subsequent refinements of this work have been challenged and to a great extent refused. But here again, the grasp of the matter which he had was so valuable and formed so excellent a foundation on which to build up further doctrines that we are indebted to Ehrlich more than to anyone else for the modern views on every branch of immunity. It is not possible within the compass of a short notice to follow up all the ramifications of this work; nor can we do more than recall the fact that Ehrlich's work has dominated our practice in regard to the dosage of diphtheria antitoxin, has modified the position in regard to bactericidal substances, has rendered possible the Wassermann reaction of syphilis, the agglutination reaction of enteric fever, and the precipitin test in its forensic significance, and has laid the foundation for all forms of immunotherapeutic measures.



Closely connected with the researches conducted under Ehrlich's guidance at Frankfurt on immunity receptors and the mechanism of the toxin-antitoxin reaction, is the subject of cancer research, in which Ehrlich, together with Apolant and others, participated. That this investigation has not led either to a revolutionary practical mode of treatment or prophylaxis, or to the formulation of one of his extraordinarily ingenious theories, does not detract from its importance. But the work has not been sterile. It must be remembered that the little that has evolved from this form of research is the result either of his investigations or of his teaching. Bashford, who has done more than anyone else in this direction in England, was for some time an assistant at the Institute for Experimental Therapy at Frankfurt.

In the early 'nineties of the last century, Ehrlich devoted much time, thought and attention to the relation between chemical constitution and pharmacological action. The knowledge derived from this study formed the basis of a subject which he made peculiarly his own, namely, chemiotherapy. How important this subject was regarded is shown by the fact that he was invited to deliver a special address in the Albert Hall, London, on the occasion of the last International Congress of Medicine in 1913. A study of all that issued from his pen on this matter is essential for every student of modern therapeutics, and, as an introduction to this study, we can recommend a perusal of an address on the relation of chemical constitution, distribution and pharmacological action, delivered in 1898 in Berlin and published in the first volume of the von Leyden-Festschrift. Chemio-therapy is a subject of which we know but little, but, nevertheless, it has already given birth to a number of offsprings. Of these the most striking is what is termed *intravitam* staining, with which the name of Goldmann is associated. This subject also is essentially one which owes its conception to Ehrlich. Mention must also be made of the systematized search for a means to achieve what he termed *therapia sterilisans magna*. This part of his chemio-therapy researches was conducted with protozoa like trypanosomes and spirochaetes, and, as is well known, led to the isolation and description of many new chemical compounds containing arsenic and an amino group. Among these was the celebrated substance, *dioxy-diamino-arseno-benzol*, or salvarsan, which was the 606th substance of this nature produced. Less well known is his arsenophenylglycin, for which it has been claimed that a sterilization of trypanosomes in rats can be effected as the result of one injection, and of the other phenyl compounds with which he worked a great deal of scientifically important knowledge has been collected.

Paul Ehrlich started a host of other researches, and many of these are being prosecuted with good prospect of success by his assistants, collaborators and pupils. The influence of his work and teaching will live, even if the master has gone to sleep. His devotion to scientific research, his extraordinary capability as an organizer of an institute for research and his limitless energy in keeping a large number of investigations going simultaneously command the respect and admiration of all. His fame was not built up on a chance discovery, but stands on a monument of scientific work, prosecuted through many years and inspired by true genius.

Correspondence.

EPIDEMIC CEREBRO-SPINAL MENINGITIS.

Sir,—The outbreak of cerebro-spinal meningitis in practically every military camp in Australia, Europe and Egypt, renders it very necessary to obtain some means of limiting its ravages. This implies that any method which holds out any reasonable hope should be given a chance, and carried out thoroughly.

At the Seymour Camp I have had the opportunity of seeing all the usual hygienic methods practised. These included the immediate isolation of contacts, fumigation of

tents and belongings of patients, spraying of the nose and throats of all the men in camp twice a day, and spraying the interior of the tents with formalin. All these methods were, I think, given a thorough trial. In addition, tents were struck, and the contents exposed to the sun and air as often as practicable. Also, the men had a ration of eucalyptus oil daily, and many kept their own private supply for frequent use. Yet the whole of the above measures carried out in a thorough fashion have given very disappointing results. Meningitis still occurs, influenza and respiratory troubles are widespread.

The two main factors in the ætiology, to my mind, are:—

First, the widespread respiratory catarrhs, especially of the naso-pharynx. Every patient I have seen has been suffering from an influenzal attack for a few days, or has had some form of "cold."

The second factor is overcrowding in tents. This is unavoidable, as even six in an ordinary bell tent must be looked upon as overcrowding. This second factor is of importance, in that it spreads respiratory infection. But as far as meningitis itself is concerned there has not so far been a second case in one tent and no contacts, *i.e.*, those isolated as such, have developed the disease. I look upon weather, climate and soil as comparatively minor factors.

If all these hygienic measures have failed, what other method is there which will be at once simple, inexpensive and effective? Personally I consider the most hopeful is inoculation. Dr. E. T. C. Milligan, of Melbourne, who has been at the front in France since the beginning of the war, wrote to me some months ago to the effect that large doses of vaccine were being used with convincing results in the treatment of the disease. On coming into camp at Seymour I thought that a vaccine might be used prophylactically. I therefore paid a visit to the Children's Hospital, and the pathologist (Dr. R. Webster) gave me an injection of 20 millions. On arriving in camp several of the medical officers decided to follow suit, and Dr. Webster very kindly prepared a mixed meningococcal vaccine from several of the cases then in the wards. I have now inoculated between 50 and 60 officers, medical men, and dispensers in camp, giving a dose of up to 60 millions. This dosage causes a distinct local reaction, with an area of hyperæmia about 2 or 3 inches in diameter, causing very little discomfort, and practically no general symptoms, though one or two men have said they felt a little languid. The maximum reaction is reached in about 24 hours, and disappears during the course of a day or two. No doubt a series of, say, three injections of increasing dosage would be more effective than a single injection. The procedure in my opinion, is free from risk, and could be carried out far more rapidly than such a method as suggested by Dr. Shorney, in the last number of the Journal. The expense would be minimal, as a large quantity of a mixed vaccine could be prepared for a small sum from cases occurring in any of the military camps. The question as to whether the causative organism is the true *meningococcus intracellularis* is of no importance so long as a vaccine from local cases is prepared. Dr. Webster's investigations show that it corresponds closely, if not absolutely, in all its staining and fermentation reactions to the true meningococcus of Weichselbaum.

The only way to ascertain the value of inoculation is to vaccinate a whole camp against the disease. A camp of 5000 men could be done in a single day by four medical men. Each medical man, with two assistants, could inoculate 300 soldiers in an hour.

Owing to the great importance of the subject I hold very strongly that the sooner the method is put on trial the better. The small number of men I have inoculated can only serve as an indication of the perfect safety of the method, not as an indication of efficiency. Needless to say, not one of that 50 or 60 men has developed the disease. I make no excuse for the length of this letter, as it is necessary to show some reason for the urgency of giving inoculation a fair trial, all other methods having failed.

Yours, etc.,

W. SHENTON GARNETT. M.D.

391 Dandenong Road, Armadale,
Melbourne, August 24, 1915.

VARICOCELE AND MILITARY EFFICIENCY.

Sir,—I have read with interest several letters in the last few Medical Journals with reference to the examination of recruits and the high percentage of rejects. From my own experience in the examination of recruits from the Manildra district, I am convinced that there appears to be a good deal of irregularity and lack of uniformity in the selection of recruits at headquarters, which is bound to affect prospective volunteers. Some of the recruits I have sent along had made several attempts before they had been able to pass the test. They succeeded in the second or third attempt, after having failed in the first. In the majority of cases the cause of doubt seems to have been due to difference of opinion with regard to the variocele question. I am quoting two cases which may be of interest; and no doubt there are many others.

Case I.—A young man of 27, with a chest expansion of 6 inches, sound in every other way, and accustomed to hard farming work from daylight to dark without suffering the slightest inconvenience from variocele, could not pass for this reason. For strength and endurance this man was regarded as the pick of the district.

Case II.—A young man, very strong, and a good specimen in every way, failed in his first attempt, but on applying a couple of days later passed easily. On the other hand men who have led sedentary indoor lives are often picked. I am certain these men could not make as useful soldiers as those referred to. It seems to me that if the regulation with regard to varicocele is to be enforced rigidly, many excellent men will be turned down. I fail to see that a small variocele is at all detrimental to the fighting qualities and worth of any man.

Yours, etc.,

A. J. P. CHAPMAN, M.B.

Manildra, August 24, 1915.

Sir,—I wonder how many of your readers would justify this. A young, extremely eager recruit was rejected on account of varicose veins of his legs. He had saved £40 out of his scanty earnings, and with this in hand consulted a surgeon. The surgeon, a young, wealthy Australian, excised the veins and charged the £40.

O ye young Australians, who are giving your limbs and your lives for your country! Is this the thing ye are fighting for? O ye "slackers" and "shirkers," who can blame ye when your brother shows such patriotism?

Yours, etc.,

INDIGNANT.

PEDICULOSIS AND ITS TREATMENT.

Sir,—Dr. Gamble's hypothesis as to the identity of two cocci that loom large just now reminds me of the saying of an old observer, "Curious, if true, but probably not true."

However, let the bacteriologists settle that; my quarry is well known, but I don't think that either he or gonococcus are treated, either by the laity or the profession, with nearly the respect that is due to them.

As a naturalist, I am very interested in both. It is very hard to deal with the gonococcal bacterium and to restore *Homo sapiens* to his pristine (physical) purity, but the very reverse is the case with our favourite insect, pediculus.

I want to make some three statements about this parasite as regards soldiers and sailors and civilians, male and female.

Firstly, don't abuse people and call them lousy beasts and dirt scavengers because they have pediculosis. Go easy, and treat it as ignorance; have confidence, and you easily heal them, and it helps along social hygiene. Get a man's confidence and you can point out the true road of life. Abuse him and you do harm.

Secondly, don't altogether trust orderlies or nurses. See the victim yourself; examine the pubes, anal region, umbilicus, axillæ, occiput, and inside of the thighs in every case. It is astounding where you find the ova. Show orderlies and nurses where to look and what to do, until you can absolutely trust them to do, behind your back, what you yourself would do. This is not too common, but your example is immense.

Thirdly, a common, cheap remedy is needed. Carbolic acid gives this; 1 in 40 will, under an hour, kill both insect and

ovum. I have cleaned up a gin's head in an hour, so that neither I nor matron could find another. It is said that hair will absorb carbolic acid. At any rate, the ova die. The treatment of the clothes is the boiler. This straightforward, simple remedy should be known far and wide to not only ourselves but to the laity.

Yours, etc.,
F. HAMILTON KENNY.

H.M.A. Naval Depôt,
August 28, 1915.

Medical Appointments.

The following appointments have been made at the Melbourne Hospital:—

Dr. Mabel Neylan has been appointed Surgeon to the Camooweal Cottage Hospital, Queensland.

Dr. Arthur E. Hayward has been appointed Honorary Secretary of the Tasmanian Branch of the British Medical Association during the absence of Dr. James Sprent, who has gone away on military duty.

Dr. W. C. Dawson has been appointed Government Medical Officer at Weston, New South Wales, in place of Dr. W. Fisher, resigned.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xiii.

Brisbane Hospital, Resident Medical Officers.
Children's Hospital, Perth, Resident Medical Officer.
Black Range District Hospital, Medical Officer.
Lunacy Department, Victoria, Medical Officer.
Royal Alexandra Hospital for Children, Sydney, Chief Resident Medical Officer.
Bundarra District Hospital, Medical Officer.
Lady Lammington Hospital, Brisbane, Resident Medical Officer.

Proceedings of the Australasian Medical Boards.

QUEENSLAND.

The following have been registered under the provisions of the "Medical Act of 1867" as duly qualified medical practitioners:—

Graham, Henry Charles, Friezland, M.B., Ch.B., Univ. Melb., 1915.
Rorke, Sydney Norman, Laidley, M.B., Ch.M. Univ. Syd., 1910.
Smith, Eric McLeod, Bundaberg, M.R.C.S., Eng., L.R.C.P. Lond., 1905.
Whish, George Milroy, Winton, M.B., Ch.B. Univ. Glasg., 1912.
Wilbe, Ernest Edward, Croydon, L.S.A., Lond., 1907, D.T.M., Un. Lpool., 1913.

Diary for the Month.

Sept. 8.—Cent. South. Med. Assoc. (Queanbeyan), N.S.W.
Sept. 8.—Melb. Pediatric Soc.
Sept. 8.—South Sydney Med. Assoc., N.S.W.
Sept. 9.—Vict. Branch, B.M.A., Council.
Sept. 10.—N.S.W. Branch, B.M.A., Clinical. Last day for nomination of candidates for election of two members of Federal Committee.
Sept. 10.—South Aust. Branch, B.M.A., Council.
Sept. 14.—Tasmanian Branch, B.M.A., Monthly and Council.
Sept. 15.—West. Aust. Branch, B.M.A., General.
Sept. 17.—Queensland Branch, B.M.A., Council.
Sept. 21.—N.S.W. Branch B.M.A., Executive and Finance Committee; Ethics Committee.
Sept. 23.—Return of Ballot Papers for election of two members of Federal Committee.
Sept. 24.—Melb. Hosp. Clinical Soc.
Sept. 24.—N.S.W. Branch, B.M.A., Ordinary. Election of two members of Federal Committee.
Sept. 28.—N.S.W. Organization and Science Committee; Medical Politics Committee.
Sept. 28.—Vict. Branch, B.M.A., Eye and Ear Section.
Sept. 29.—Vict. Branch, B.M.A., Council.
Sept. 30.—Vict. Branch, B.M.A., Election of two members Federal Committee.
Sept. 30.—South Aust. Branch, B.M.A., Monthly.
Oct. 1 and 2.—N.S.W. Branch, B.M.A., Annual Meeting (1915) of Delegates of Local Associations of Members with the Council.
Oct. 1.—Q. Branch, B.M.A., Monthly.

Covers for binding *The Medical Journal of Australia* for Vol. I., 1915, can be obtained on application to the Manager B.M.A. Building, 30-34 Elizabeth Street, Sydney. The price of a cloth cover is 2s., and of half leather 3s. 6d.; postage, 7d.

Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
QUEENSLAND. (Hon. Sec. B.M.A. Building, Adelaide Street, Brisbane).	Brisbane United F.S. Institute. F.S. Lodges at Longreach.
WESTERN AUSTRALIA. (Hon. Sec. 230 St. George's Terrace, Perth).	Swan District Medical Officer. All Contract Practice Appointments in W.A.
NEW SOUTH WALES. (Hon. Sec. 30-34 Elizabeth Street, Sydney).	Australian Natives Association. Balmain United F.S. Dispensary. Burwood District F.S. Institute. Canterbury United F.S. Dispensary. Goulburn F.S. Association. Leichhardt and Petersham Dispensary. M.U. Oddfellows Med. Inst., Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. Mullumbimby District Friendly Societies. N.S.W. Ambulance Association and Transport Brigade. N. Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Braidwood. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Mudgee. F.S. Lodges at Orange. F.S. Lodges at Parramatta, Penrith, and Auburn. F.S. Lodges at Wellington. Newcastle Collieries— Killingworth. Seaham Nos. 1 and 2. West Wallsend.
SOUTH AUSTRALIA. (Hon. Sec. 3 North Terrace, Adelaide).	The F.S. Medical Assoc. Incorp., Adelaide.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

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